The Extension Messenger
COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

lume XIII - 14 January 1, 1930 Number 1

Farmers Cast Up Accounts To See What 1929 Brought Them

What kind of a year 1929 has been for the Illinois farmer will be settled
thin the next few months when 2,000 of them scattered throughout the state will
ose the books which they have been keeping in the farm accounting service main-
ined by the farm organization and management department of the College of Agricul-
re, University of Illinois.

Simultaneous with the closing of their 1929 books, the 2,000 farmers and
ndreds of others in the 85 or more counties cooperating in the service will start
set of accounts for the new year. Representatives of the farm management depart-
nt are scheduled to spend a total of 147 days in the field closing the 1929 ac-
unts and starting new ones for 1930. Two men, including the local county farm ad-
ser, can take care of about 20 farms a day. The accounts are then analyzed by the
partment and the significant facts set up for the farm operator in an average of
ur or five hours for each account.

More than 5,500 of the Illinois farm account books were sold to farmers at
st during 1929, but only about 2,500 of the farmers enrolled to receive the ser-
ce which is offered with the books. The book and service represent 14 years of
perience in adapting accounting methods and service to farm use, a record which
kes the College of Agriculture, University of Illinois one of the pioneer institu-
ons of the country in farm accounting work.

"A suitable system of accounts is one of the most obvious needs in the way
better business methods on many farms of the state", it was pointed out by R. R.
lelson, extension specialist in charge of the college's farm accounting service.
nis need is generally recognized by farm operators, but until the college's plan
s developed many of them did not see how the work of keeping accounts could be
led to their long list of varied tasks. That the system does make it possible for
e busy farmer to keep financial records is proved by the fact that one of the co-
erating farmers did more than $16,000 worth of business in 1928 on a half section
land with the help of only one man besides himself and rush time help costing
out $200. There are few men busier than the operator of this farm, yet he kept his
counts and checked them in for analysis. He was not too busy to support his judg-
nt with the needed facts and incidentally his accounts showed his to be one of the
st efficiently operated farm businesses on which the college has ever received an
count."

- M -

President Bradford Knapp On Farm and Home Week Program

Bradford Knapp, president of the Alabama Polytechnic Institute, Auburn,
been secured to address Illinois farmers and homemakers at the evening session,
sday, January 14, during the annual Farm and Home Week, of the College of Agri-
ture, University of Illinois, it is announced by Dean H. W. Mumford.

- M -

Fake "High-Profit" Crops Rob Illinois Soils Of Fertility

Fertility of Illinois' farm lands has been sadly depleted through the long-time effect of growing what many farmers think are "high-profit" crops, according to H. C. M. Case, head of the farm organization and management department, College of Agriculture, University of Illinois.

For too long a time many have thought that "high-profit" crops are those which pay the biggest total income an acre a year, he said. High-profit crops are those which pay the best net returns an acre not for one year but over a long period of years, it was pointed out. In selecting high profit crops the farmer must include not too large an acreage of any one crop, he must pick the combination of crops that best fits the needs of his farm, he must plan for a long-time program of soil maintenance or soil building and he must remember that market conditions or crop pests and diseases or changes in methods of production may permanently affect the relative profit of crops.

"Corn, wheat, sweet clover for pasture and alfalfa for hay are the high-profit crops on general farms in central Illinois. This does not answer the question for the entire state. Neither does it indicate the percentage of land that should be in these different crops. The best rotations for any part of the state should include a cultivated crop, a small grain crop and a hay or pasture crop.

"If an equal acreage of the three types of crops, corn, wheat and alfalfa or sweet clover, were grown, it would mean only one-third of the farm in each of these crops. The high-profit crop basis of building a rotation, however, takes into account that some of the crops are relatively more profitable than others and should get a larger place in the rotation. Likewise attention must be given to the way these crops fit together in using power, labor and equipment and in providing feed needed for livestock.

"From the standpoint of labor and power used, not more than half of the land should be in any one crop. The limit would be drawn at this same point by the necessity of maintaining the fertility of the soil and of growing crops needed for feeding livestock. It is hard to follow corn with either wheat or legume crops, but oats, barley, spring wheat and soybeans fill this need. These crops may not be as profitable as some of the high-profit ones which have been mentioned, but they fit into the plan of operating the farm in a way that may add to the total profit and still permit growing 80 per cent or more of the land in high-profit crops."

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Tularemia, Rabbit Disease, Claiming New Toll Of Victims

Not a "rabbit punch" but a "rabbit disease" is laying low a new toll of victims who may erroneously believe that they are suffering from "flue", typhoid fever or even tuberculosis, according to Dr. Robert Graham, chief in animal pathology and hygiene at the College of Agriculture, University of Illinois. The disease is tularemia, frequently mistaken for some other malady because it is a newcomer in public health circles, he explained. It is a serious infectious disease which human beings contract chiefly by contamination of their hands with portions of the internal organs or with the body fluids of infected rabbits, Dr. Graham said. The most recent cases of the disease to be reported in the state are those of three Urbana residents whose ailment was positively diagnosed in the college's laboratory of animal pathology and hygiene. Cooks, market men and hunters should wear rubber gloves in dressing rabbits in order to protect themselves against the disease, Dr. Graham warned. Thorough cooking destroys the infection, thus rendering an infected rabbit harmless, though not wholesome, for food.

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Two Farm Puzzlers To Enliven Events Of State Farm Week

Two of the farmer's biggest puzzlers - power and by-products - are to be worked on for a full day during the coming annual Farm and Home Week, January 13 to 17, at the College of Agriculture, University of Illinois. The morning session on Wednesday, January 15, is to be given over entirely to the general theme of, "Trends in the Use of Power on the Farm", while the afternoon session of that day is to be devoted to, "Utilization of Farm Products and By-Products on the Farm."

The power program in the morning is to be opened by R. C. Ross, of the farm organization and management department, with some new tips on planning for the economical use of farm power. Electric power on the farm is to be discussed by E. W. Lehmann, head of the farm mechanics department, after which W. B. Nevens, assistant chief in dairy cattle feeding, is to take up the processing of feed on the farm. Some new applications of mechanical power are to be outlined by R. I. Shawl, of the farm mechanics department. Latest developments in the use of horse power on the farm are to be reported by E. T. Robbins, livestock extension specialist.

A discussion of the quantities of products and by-products produced on Illinois farms is to open the afternoon program. The speaker will be Dr. W. L. Burlison, head of the agronomy department. How to make use of roughage on a general livestock farm is to be explained by H. P. Rusk, head of the animal husbandry department. Making use of roughage on the dairy farm will be explained by W. J. Fraser, of the dairy department. Figures on the fertilizer value of crop residues, and green manures will be reported by C. M. Linsley, assistant chief in soils extension. To close the afternoon program, R. R. Hudelson, of the farm management department, will tell the stories of a general livestock farm and a dairy farm on which roughage is being used efficiently.

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Ruinous Thievery Of Soil Fertility Blamed On Erosion

Illinois' bill for soil erosion losses has taken on a startling size in the light of recent findings on the problem, according to E. G. Johnson, of the farm mechanics department, College of Agriculture, University of Illinois. From research data collected by the federal department of agriculture and various state agricultural colleges, it is estimated that soil erosion is removing plant food 21 times faster than it is being taken off by crops. Five and a half million acres of Illinois farm land are being eroded and gullied, according to Johnson.

"A method discovered 44 years ago is today the most effective and surest method of controlling soil erosion, he said. This method involves the use of Mangum terraces, so named for their discoverer. A Mangum terrace is nothing more than a ridge of dirt formed crosswise of the slope with a broad enough base so that regular farm machinery may operate without interference. The run-off from the hillside is caught by the terrace and carried across the slope instead of being left to wash directly down the hillside. In this way the flow of water is checked and erosion prevented.

"The terraces are built from 75 to 100 feet apart depending upon the slope of the land. They are so constructed that ordinary farm practices and crops are handled the same as before. When they are once made, if properly handled, they need very little attention.

"Most every farmer can get the machinery needed to build terraces. Staking out and locating them is the only part that is hard. This is usually done with a drainage level. This instrument may be new to the farmer and may appear complicated but by a little practice can be used satisfactorily.

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Changes In Supply Do Not Cause All Variations In Hog Prices

A turn which the hog market took during the closing months of the year just past furnishes a striking illustration of the fact that not all variations in hog prices are caused by variations in supply, according to Dr. L. J. Norton, of the division of agricultural economics, College of Agriculture, University of Illinois. A relatively low level of prices which prevailed after September 1 puzzled many farmers. Down to about the first of December two factors were more important in causing this situation than increased receipts. These factors were, first, the larger margin which was taken by killers and, second, the lower prices for certain pork products particularly hams and lard.

"During October and November prices were as low as they were in the early months when receipts at seven leading markets were nearly 30 per cent larger than they were at the end of the year and $1.50 lower than in the late spring months when receipts just about equalled those of these year-end months.

"From early in September to the middle of November the average price per 100 pounds of medium weight hogs at Chicago has exceeded the value of certain fixed quantities of four leading pork products, namely, bacon, hams, loins and lard, by slightly more than $1. The margin between the price of hogs and the combined value of the same quantities of these four products for the first nine months of the year averaged only 25 cents. The wider margin secured from September into November accounts for one-half of the $1.50 difference in the levels of hog prices. Probably more than one-half of the difference would be accounted for if all pork products were taken into consideration. The margin of 25 cents in the first nine months compares with a figure of approximately 70 cents for the five-year period, 1923 to 1928. The margin since September is, therefore, more nearly in line with the normal margin than was the margin during the first nine months of the year.

"Since about the first of September lard and hams have brought lower prices than the same volume would have sold for during the first nine months. Lard in particular has been lower. During November hams also were relatively weak. A weakening of demand because of poorer business conditions probably accounts for the lower prices of these products.

"Since about December 1 hogs have been at about the same level as they were earlier in the year when receipts were of the same size. The packers' margins have apparently been much smaller than they were from September to November and the cheap pork products except lard, appear to be in somewhat stronger positions."

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Profit-Making Kinks In Farm Plans To Be Revealed Farm Week

New kinks in farm planning which have made some of the better farmers of the state about $3,000 a year richer than their neighbors will be revealed to the crowds attending the thirty-third annual Farm and Home Week, January 13 to 17, at the College of Agriculture, University of Illinois. "Planning the Farm for Profit", is to be the general theme for the morning program on Friday, January 17, and one of the speakers at this session is to be M. L. Mosher, who is in charge of the farm bureau-farm management service sponsored by the college. He will show how good planning and careful management have helped scores of farmers in the state get their business over on the profit side of the ledger.

At least four other major topics which have a bearing on planning the farm for profit will come in for a full share of attention during the morning. Effective crop combinations and soil problems will be discussed by F. C. Bauer, chief in soils extension. Livestock production plans to fit corn-belt farms will be outlined by H. P. Rusk, head of the animal husbandry department. How to combine crops and livestock for efficient farm operation will be gone into by H. C. M. Case, head of the farm organization and management department. First steps in farm planning will be listed by P. E. Johnston, of the farm management department.

Following up the morning program on profit-planning, the afternoon is to be given over to a first-hand study of some of the new developments in farming. Topics listed are changes in the size of farms, the future of the family-sized farms, a larger business for the small farm, effects of machinery developments in farming, influence of new crops, changes in the dairy industry, future of meat production, utilization of farm by-products, meeting cycles in livestock production and farm prices.

Farmers themselves will lead the discussions on these subjects. The list includes John P. Hanna, Geneseo; Fred E. Herndon, Macomb; Frank R. Hubert, Saybrook; Chester J. McCord, Newton; Charles Meis, Saunemin; W. D. Mobley, Mount Sterling; W. E. Riegel, Tolono; Garrett Tolan, Farmingdale, and Roland Tucker, Minonk. D. H. Doane, of the Doane Agricultural Service, St. Louis, will round out the list of speakers for the afternoon discussions.

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Will Stress Quality In Short Course For Dairy Manufacturers

A dish of better ice cream and a bottle of finer milk is promised the consumer of dairy products in Illinois through the medium of a short course for dairy plant operators to be held at the College of Agriculture, University of Illinois, January 13 to 18. Higher quality in dairy products is to be the target in the short course lectures, demonstrations and laboratory work, according to P. H. Tracy, in charge of the college dairy manufactures division. A representative number of dairy plant operators from all over Illinois and even adjoining states is expected to be here for the course.

Problems common to the manufacture of all dairy products will be considered during the first part of the week, while some of the more important problems relating to the manufacture of butter, ice cream, soft cheese, cultured milk drinks, market milk and cream and condensed milk will be dealt with during the rest of the course.

- M -

Suggests Hog Raisers Drop Minerals For Something More Helpful

More money than has ever before been made off Illinois' 80 million dollar hog crop would be realized this year by farmers of the state if they would forget about mineral mixtures overnight and awaken in the morning with a renewed determination to practice something more helpful like the swine sanitation system, according to Dr. W. E. Carroll, chief in swine husbandry at the College of Agriculture, University of Illinois.

"Slack coal won't make pork chops any more than a sow's ear will make a silk purse. Hence there is no sound reason for the slack coal and many other ingredients that find their way into the complex mineral mixtures now being urged upon farmers and hog raisers in advertising and sales talks. Evidence is slowly accumulating to indicate that some of these ingredients are actually harmful to the pig.

"Some of the minerals which are most commonly used in complex mineral mixtures and which apparently are of no value in the ration are slack coal, charcoal, copperas, common baking soda, epsom salts, glauber salts, fenugreek, annis and other supposed flavoring materials.

"Occasionally drugs of known medicinal value are included but the dosage that the pig gets is much too small to be of any value to him even if he needed that particular drug, which nine times out of ten he does not.

"A full feed of tankage or of any of the recommended tankage-rich protein supplements carries all the minerals that swine need unless it be common salt. The same can be said of rations balanced with skimmilk and buttermilk. Pasture, too, greatly reduces the need for minerals. In fact, about the only common rations that are lacking in minerals are those made up entirely of plant materials, such as rations of corn and soybeans, corn and soybean oilmeal and corn and linseed meal. Even such rations as these commonly lack but two or three mineral compounds.

"The hog raiser who is feeding a ration that needs minerals can supply all of them that are required with a simple homemade mixture that will not cost much more than $1.50 a hundredweight. It is made up of 2 parts, by weight, of limestone, 2 parts of bone meal and 1 part of salt. In goiterous areas 1 ounce of potassium iodide should be added to each 100 pounds of the mixture to prevent goiter troubles.

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Cost Figures To Help Farmers Decide About Corn Harvest Methods

With farmers up against a choice between man labor and machines for corn husking, the College of Agriculture, University of Illinois is pushing to completion a study on what it costs to harvest corn by the various methods now in use. Relatively high costs of man labor and the scarcity of satisfactory farm help have set many farmers to thinking about substituting machines for man labor. There also are many new types of mechanical pickers on the market now and farmers are trying to decide as to the advantages of one-row and two-row machines. The study will include the costs of husking corn by hand from standing stalks, husking with mechanical pickers, filling silos with stationary and field silage cutters, husking from the shock and harvesting with livestock, according to P. E. Johnston, of the farm organization and management department. Facts on the costs of husking corn have been collected by the college over a long period of years, as detailed cost records for various parts of the state are available since 1913.

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Twelve-Year Old Macon County Girl Wins State Corn Title

A "queen" this year will rule the "kingdom of corn" in Illinois for the first time in the 10 years' history of the monarchy. She is Mildred Riley, 12 years old, of Maroa, Macon county. Her ten-ear sample of yellow corn won the grand championship over 327 other ten-ear samples competing in the tenth annual Utility Corn Show, which was a feature of the thirty-third annual Farm and Home Week of the College of Agriculture, University of Illinois. The winning sample outscored the others with a mark of 82 points on germination, conformation and physical appearance, on the basis of 100 being perfect.

Little Miss Riley was given her closest competition for the honor by H. C. Nieman, a veteran corn grower of Philo, whose ten-ear sample of white corn scored 81.8.

The new "queen" is likewise the "corn princess" of the state, for previous to being declared the grand champion entry of the show, her ten-ear sample was made the grand sweepstakes winner in the classes for junior 4-H club members.

Galen Allen, Cerro Gordo, showed the grand championship single ear of the show.

A total of 662 entries this year competed for the $800 in cash prizes offered by the Illinois Bankers' Association. Of this amount $500 was distributed in the adult classes and $300 in the junior classes. Gold watches were awarded to the new "corn king", the "princess", H. C. Nieman, Philo, and Wayne Rice, Blue Mound, for having the best ten-ear samples of yellow and white corn in the adult and junior classes.

Sweepstakes and championship prizes were awarded as follows:

Southern Illinois, junior classes - Ten ears yellow corn, Paul Trapp, Mt. Carmel; ten ears white corn, Harvey Stroud, Wheeler; single ear yellow corn, Elizabeth Corrie, St. Francisville; single ear white corn, Lloyd Tiffany, Lawrenceville, Route 2; peck shelled seed corn, Elizabeth Corrie, St. Francisville.

Champion ten ears yellow corn, adult, Sommer Brothers, Pekin; junior, Mildred Riley, Maroa.

Champion ten ears white corn, adult, H. C. Nieman, Philo; junior, Wayne Rice, Blue Mound.

Champion single ear, adult, Galen Allen, Cerro Gordo; junior, Delbert Doubet, Hanna City.

Champion peck, adult, Henry W. Book, Naperville; junior, Malcolm Canterbury, Cantrall.

Grand sweepstakes, ten ears, adult, H. C. Nieman, Philo; junior, Mildred Riley, Maroa.

Grand champion ten ears, Mildred Riley, Maroa.

Grand champion single ear, Galen Allen, Cerro Gordo.

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Pig Crop Indicates Growers Not Looking For Big Profits

Swine growers of Illinois and of the rest of the country are not counting on any unusual profits if recent federal estimates accurately reflect existing conditions, according to Dr. W. E. Carroll, chief in swine husbandry at the College of Agriculture, University of Illinois.

"Apparently there will be very little change in the swine population of Illinois or of the corn belt or of the United States as a whole during the next year, judging from the federal estimates. Illinois is credited with having produced in the neighborhood of 3 per cent fall pigs in 1929 than were produced in 1928. In the corn belt the 1929 fall crop was nearly 4 per cent larger, though there was no significant change over 1928 for the United States as a whole.

"The forecast for the coming spring pig crop is for possibly a small decline in numbers. The change, even if it does materialize, will not be large.

"These conditions indicate a belief on the part of the swine growers of the country that the immediate future does not promise any unusual profits in the business. The relation between the price of corn and the price of hogs beginning with last August has not been favorable to hogs. From March through July of last year the monthly corn-hog ratio varied only from 11.3 to 11.7. This is practically the dividing line between profitable and unprofitable pork production. When the value of 11.3 bushels of corn exceeds the market price of hogs a hundred, the profits in swine begin to dwindle. On the other hand, when this amount of corn is worth less than the price of hogs a hundred the swine enterprise shows a profit.

"There are some farmers who consistently make a profit on hogs even when the corn-hog ratio drops below 10, as it did during two or three of the fall months of 1929. It is such farms as these that lend hope to the present situation. With the price of hogs about on the border line, good management is more valuable than ever because it may mean the difference between a small profit and a loss. In other words, the business is in the state where little things count."

- M -

Soil Treatment Pays As High As $18 An Acre, Bauer Says

Poorer farm soils of Illinois which otherwise are outyielded seven to one by the most productive soils of the state are outyielded less than two to one when both types are treated by the most effective methods. This was pointed out before the soils and crops sessions of the thirty-third annual Farm and Home Week of the College of Agriculture, University of Illinois, by Dr. F. C. Bauer, chief of soil experiment fields. Value of the increased crop yields on the poorer soils is more than enough to pay for the added costs of the treatment, he reported.

"Rewards for soil treatment are strikingly illustrated by results from field experiments established by the college in 1876 on land now commonly known as the Morrow plots, oldest of their kind in the United States. Without soil treatment the land that has been in corn continuously would be worth only $19 an acre, net, in order to return 5 per cent on the investment. Land that has been in a corn and oats rotation would be worth $76 an acre and that in a corn, oats and clover rotation $208 an acre. Under a soil treatment system of manure, limestone and phosphate, however, the continuous corn land is worth $46 an acre on the basis of returning 5 per cent on the investment. The corn and oats land is worth $124 an acre and the corn, oats and clover land $311 an acre."

- M -

More Illinois Land Being Put Under Commercial Managers

So rapid has been the growth of commercial land management during the past few years that more than 30 farm managers are now handling upwards of 200,000 acres of farm land in Illinois. Reports of this were made by H. C. M. Case, head of the farm organization and management department, before the farm business sessions of the thirty-third annual Farm and Home Week being held at the College of Agriculture, University of Illinois.

About two-thirds of the group of 30 have taken up the work within the past three years, Case reported. The rest have been engaged in it a good many years, handling land belonging to large estates for the most part.

Group farm management, in which there is central management of a number of farms belonging to different owners, represents the most important development in commercial farm management in the corn belt, Case said. Much of the land under this type of management is in the hands of bankers and includes a considerable amount of "trust land", he explained. This type of management represents constructive agricultural development, he said, and its future depends largely upon the character of the men who undertake the task of managing such land. While many are succeeding with this type of work, it is probable that some mistakes will be made, he added.

Cooperative farm management, such as is rendered in the college's farm bureau-farm management service project, "distressed land" farm management, estate farm management and corporation farm management are other types of commercial management being practiced today, Case explained.

Both cooperative farm management and group farm management, he pointed out, are concerned with family-sized farm. In so far as this work succeeds it tends to perpetuate the family-sized farms on a satisfactory and permanent basis.

"Cooperation on the part of operators of family-sized farms may secure for them many of the claimed economic advantages of large scale farming. While the family-sized farm undoubtedly will predominate in the future there is reason to believe that such farms will gradually expand in acreage to occupy the time of at least two men using types of machinery which will enable one man to handle relatively more land than found on the present-day average-sized farm."

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Soybeans Prove Good Soil Legume Despite Doubts Of Critics

Despite wide differences of opinion as to its value for soil improvement, Illinois' fast-spreading soybean crop has a good record on this score, it was pointed out by O. H. Sears, assistant chief of soil biology, before the soybean-day sessions of the thirty-third annual Farm and Home Week at the College of Agriculture, University of Illinois.

Results secured in one of the college's tests showed that in a four-year rotation of corn, corn, corn and soybeans, the yield of corn after soybeans was about 10 bushels an acre higher than in the case of corn after corn, Sears reported. At another experiment station, the yield of wheat after soybeans was six bushels an acre higher than when wheat followed corn, while oats after soys yielded 17 bushels an acre more than oats after timothy. Unfortunately, the worth of the soybean crop for soil improvement has been judged too often on the basis of one factor only. The beneficial effects of any legume upon other crops in the rotation are not the result of a single condition but are brought about by several contributing factors."

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Electricity Is Cheapest Farm Power Under New Rate Plan

Under a new rate plan adopted by a number of power companies in Illinois, electricity is a cheaper source of farm power than other types ordinarily used, provided the farmer can make adequate use of the electricity, according to E. W. Lehmann, head of the farm mechanics department, College of Agriculture, University of Illinois.

The new plan makes it possible for the farmer to get service with out any expenditure as far as the line and transformer costs are concerned where the investment for the line and other equipment is not more than $450. Under this scheme the farmer agrees to pay $10 a month for the service, for which he can use up to 150 kilowatt hours of electric energy. The rate, therefore, for the first 150 kilowatt hours is 6 2/3 cents an hour. All additional energy that is used costs 3 cents a kilowatt hour. With such a rate in effect the farmer who can make adequate use of the service will find that electric power will pay its way on the farm, according to Lehmann.

The farmer who can not find adequate uses to justify his spending $10 a month might find it to his advantage to pay for the line construction and get the service under a lower minimum charge. Most power companies have such a provision. Electrical power under this plan usually costs less than when a small unit plant is used, because of the high depreciation of the storage battery and unit plant. Furthermore the small unit plant will not provide complete electric service for the farm.

"Complete electric service for the farm can be furnished on a basis that is satisfactory to the farmer only when considerable use can be made of it. The farmer who expects to use electric service for lighting and for minor appliances in the home only can not expect to get the service at the same cost a kilowatt hour as the man who makes use of it for lighting, pumping water, cooking, other household uses and for the various power purposes about the farmstead. Where general use is made of electric service on the farm the power company not only is justified in financing the line to the farm but also is justified in helping the farmer get his equipment."

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To Hold Cook County Truck Growers' School February 11, 12 and 13.

A school for truck growers will be conducted by the department of horticulture College of Agriculture, University of Illinois, at La Grange, Cook county, Tuesday, Wednesday and Thursday, February 11, 12 and 13. La Grange is readily accessible by hardroad from nearly all points in the northeastern part of the State, thus giving various commercial vegetable growers in that region a chance to get together for the discussion of problems of mutual interest.

The program will consist of talks by various members of the department's research and extension staff, by experienced truck growers in the Chicago district and by various other invited speakers. Problems of marketing as well as of production will be considered.

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Using Phosphates As Lime Substitute Was Carried Too Far

Some foundation has been discovered for the claim made a few years ago that phosphates can take the place of limestone in sweetening acid soils, but the idea was carried to an extreme, according to F. H. Crane, associate in soil fertility at the College of Agriculture, University of Illinois.

Many farmers got the eroneous impression that 200 to 400 pounds of phosphate could take the place of three or four tons of limestone in correcting soil acidity, he explained. Experiments made by the college revealed that a four-ton application of limestone was far more effective, both in increasing sweet clover growth and in decreasing acidity, than a ten-ton dose of phosphate which produced more sweet clover than the other phosphate treatments but which was economically impracticable.

"There is no doubt that phosphate applications often are beneficial to legume crops, but when used in such amounts as are ordinarily used in practice, this effect on crops is more likely due to supplying their needs for phosphate rather than to the effect of the phosphate on soil reaction.

"Claims made for phosphates in sweetening acid soils are based on the fact that the injurious effects of soil acidity may be due in part to the toxicity of aluminum compounds which become 'soluble' or 'exchangeable' as a soil becomes acid. The most practical way of making these toxic aluminum compounds non-toxic is to correct the acidity of the soil by applying limestone. However, phosphates, when they dissolve in the soil, react with these poisonous aluminum salts, converting them into the very insoluble non-toxic aluminum phosphates.

"In greenhouse trials carried on at the experiment station a very acid soil on which sweet clover would not grow was treated with superphosphate in amounts ranging from none up to 90 tons an acre. Sweet clover growth was increased with increasing applications of phosphate, the maximum growth being made under a treatment of ten tons of phosphate an acre. Although such an application of phosphate is out of the question in practice, the results indicated that the toxicity of the acid soil was lessened by the phosphate. On the other hand, a four-ton an acre application of limestone was considerably more effective, both in increasing sweet clover growth and in lessening the acidity, than the economically impracticable ten-ton dose of phosphate."

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Electricity Beats Frosty Pump Handle For Getting Water

Now that the frost is on the pump handle, electricity stands out stronger than ever as the most nearly ideal power for pumping water, says E. W. Lehmann, head of the farm mechanics department, College of Agriculture, University of Illinois. When electrical power is used for this job, a large storage tank is unnecessary, the pump may be automatically operated and the cost of operation is relatively slight, he pointed out.

"For ordinary household use, the operating cost of an electrically operated pump is very slight. It takes only four or five kilowatt hours a month to provide water from a shallow well. For a complete farm water supply for stock as well as household use, it would require around 30 kilowatt hours a month, when pumping from a deep well. The actual cost would, of course, depend on the rate available. The cost at a rate of six cents a kilowat hour would be less than two dollars a month for the complete needs of the farm.

"While the size of storage tank is determined to a large extent by the kind of power, it also is affected by the amount of water used daily and the amount used during a short period, as well as the supply. With an electrically operated outfit, under ordinary farm conditions, with a good well, a relatively small and inexpensive storage tank will supply enough water for the farm needs.

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Expense On Septic Tanks Is Swelled By Needless Cleaning

Unsuspecting owners of homes equipped with a septic tank are likely to spend a lot on money having the tank cleaned out when it does not need it, according to E. W. Lehmann, head of the farm mechanics department, College of Agriculture, University of Illinois.

"Occasionally the home owner is led to believe that the tank needs cleaning because it apparently is full. Usually the man who is looking for such a job charges a good deal for his services and there is no reason to go to the expense unless the tank really needs to be cleaned.

"If a septic tank gives no trouble there is no reason to worry about it. It should be inspected at least once a year to be sure of its condition. When working properly, a septic tank has a scum several inches thick over the surface. On casual examination it would appear that the tank was full of more or less solid material and should be cleaned out. However, a tank of proper size should operate for a number of years without requiring any attention.

"The condition of the tank can be easily determined if there is any reason to believe that it needs cleaning. Remove the top and examine it by using a one-by-four inch board or other scantling, pushing it slowly down through the contents of the tank. The thickness of the scum on the surface can be determined reasonably accurately. The space between the scum and the sludge which accumulates in the bottom of the tank indicates the active area in the tank at the time of examination. If the sludge in the bottom of the tank has accumulated to a point where there is very little space between the bottom of the scum line and the top of the sludge line it should be cleaned out.

"With the two-chamber tank, the condition of the second chamber also is a factor. Several years of satisfactory service could be secured before the second chamber would fill up, even though the first chamber was practically filled.

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"Beauty" Of Illinois Farm Soils May Be Only "Skin Deep"

"Beauty is only skin deep", and this old saying is just as true of farm soils as it is of flappers, according to Dr. R. S. Smith, chief in soil physics at the College of Agriculture, University of Illinois.

"In the east-central part of Illinois there is a large acreage of dark-colored soil which looks all right on the surface but which is underlain by an impervious, unweathered, glacial till which in many places comes near enough to the surface to be very harmful. In contrast, in southern Illinois there is a soil type which, if judged only by what it is now producing, would be rated low. Upon examination, however, it is found that while this soil is very low in organic matter and is acid, it is reddish yellow throughout the profile and is very permeable. This soil responds to good treatment and good farming. Hence its potential value is much higher than the value indicated by the crops it is now producing.

"Some of the most important characteristics or features to look for in examining and appraising a soil are: the depth, color and texture of the surface and sub-surface layers; the permeability and color of the subsoil; the depth to carbonates, and the degree of acidity of the entire profile. The best color for the surface soil is dark brown or black, for the sub-surface a slightly yellowish brown and for the subsoil yellow or reddish yellow with a minimum of drab and gray. In Illinois gray soils are relatively poor."

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The Extension Messenger

COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

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Farmers Are Quick To Take Up New Plan Of Getting Ahead

Eagerness of Illinois farmers to put their operations on a paying business basis is reflected in the past five years' growth of the farm bureau-farm management service inaugurated by the College of Agriculture, University of Illinois, according to H. C. M. Case, head of the farm organization and management department.

When it was started in 1925 the service was the first cooperative farm venture of its kind in the United States. Enrollment totalled 240 farmers in Livingston, Woodford, McLean and Tazewell counties. There are now 640 farmers in three different groups enrolled in the service. The three groups are of about equal size. The first takes in Livingston and Woodford counties, the second McLean and Tazewell and the third Henry, Knox, Peoria and Stark counties.

What farmers think of the service is indicated by the fact that when the first four years of the work were completed 420 men signed up for it in the four counties where the plan had been originally started with the group of 240.

That there is a service to be rendered is indicated by the records from the farms of cooperators, Case pointed out. Of the 210 farmers completing records each year during 1925, 1926 and 1927, a total of 175 were on the same type of soil. Analysis of their books showed that the one-fifth most profitable of the farms made an average of about $3,000 more a year apiece than did the one-fifth least profitable farms.

There are three ways in which the service helps farmers put their business on a better paying basis, Case explained. First, an annual audit and analysis of the records kept by the cooperators enables each one to know how his business paid in comparison with that of other men farming under similar conditions. Second, an annual report is issued showing each cooperator the strong and weak points of his business. Third, each cooperator has a chance to learn how each line of farm work is made successful in his locality.

The service is a development of the farm account work started 14 years ago by the college. M. L. Mosher, of the college farm organization and management department, is in general charge of the field work for the three groups. F. A. Fisher has been employed as field man for the group in Henry, Knox, Peoria and Stark counties, while J. B. Andrews is working with the group in Livingston and Woodford counties and W. A. Herrington with the one in McLean and Tazewell counties. Members of the farm bureaus in the cooperating counties, through their executive committees, select a man to serve on an advisory committee to cooperate with the college farm organization and management department, which administers the work. This local group is responsible for the final selection of the man to serve them. In general their financial support provides for the salaries and travelling expenses of the fieldman. The major part of the local expense is met by the cooperating farmers. The college contributes about one-third of the total expense.

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Bulletin Gives Best Methods And Varieties For Oats Crop

Fourteen years' work by the experiment station of the College of Agriculture, University of Illinois to find the most profitable varieties and methods for the state's annual crop of four million acres of oats are summarized in the station's most recent bulletin, "Varieties of Oats for Illinois".

Despite the fact that oats during the past few years have been considered an unprofitable crop, there has been no perceptible falling off in their production either in Illinois or in the United States as a whole, it is reported by the authors of the bulletin, G. H. Dungan and W. L. Burlison.

For northern Illinois the highest yielding varieties of oats grown for a minimum of five years on the DeKalb crop experiment field are Silvermine 6-403, Iowar, Albion (Iowa 103), Richland (Iowa 105), and Kanota, in the order named, according to the bulletin. The most productive central Illinois varieties tested for a minimum of four years on the Urbana field are Gopher, Albion, Kanota, Richland and State Pride (Wisconsin 7). The five best southern Illinois varieties tested for a minimum of four years on the Alhambra field are Victory, Silvermine, Albion, Burt and Sixty-Day. A big hazard to oat growing in southern Illinois is believed to be the inability to sow the crop early enough.

Hull-less oats, over a five-year period, yielded very favorable in comparison with the best hulled varieties, considering the quantity of hull-free grain produced.

A 16-peck rate of seeding proved best with Silvermine oats at DeKalb, but with Sixty-day oats at Urbana the net yield increased as the rate of seeding increased up to a maximum of 18 pecks an acre.

Preliminary observations indicate that in the interest of getting adequate stands of clover, the 8-inch drill row for oats is to be preferred to closer seeding, and that even a wider drill row may be advisable, especially on thinner soils.

Kanota, Sixty-Day (Illinois Selection), Minota, Hull-less, Anthony, Gopher, Fowld's Hull-less, Burt, Cornellian and State Pride proved more resistant than other varieties in withstanding early spring freezes.

-M-

Planning Done Now Saves Garden From Being A Weed Patch

If a little more planning were done at this time of the year thousands of farm vegetable gardens in Illinois would turn out to be something more than weed patches, in the opinion of L. A. Somers, of the horticulture department, College of Agriculture, University of Illinois.

"An unplanned garden rarely has more than half the vegetables that it should have. A full assortment consists of about 40 kinds. Too often in the unplanned garden there will be ten times more lettuce than the family can possibly use and only one-tenth as much spinach as the family should have. When it comes to the labor question, an unplanned garden with part of its vegetables in beds, part in narrow rows, and with cool season and warm season vegetables mixed together makes horse cultivation of the ground impossible.

"It takes about half an acre of ground to raise an adequate supply of vegetables for a family of six persons when the rows are far enough apart for horse cultivation. Exact calculations should be made on the number of rows or the fraction of a row to be devoted to each kind of vegetable. The vegetables should be grouped according to their climatic requirements, all the cool season crops being put together and the warm season crops kept to themselves."

-M-

Gullied Field Makes 125 Bushels More Wheat When Terraced

Terraces built with practically no outlay of cash have been the means of reclaiming and building up the yielding power of a badly-gullied 25-acre field where a few years ago Silas. J. Andrus, a Wabash county farmer living near Mt. Carmel, had a hard time jumping the ditches with a wagon trying to get off the ensilage corn, according to a report which he has sent to Earl G. Johnson, farm mechanics extension specialist of the College of Agriculture, University of Illinois. Andrus is one of the many farmers of the state who are cooperating with the college in putting on demonstrations to show their neighbors the merits of terraces in stopping heavy losses caused by soil washing.

"We had been trying to control the washing in this 25-acre field by strawing and brushing the ditches but found that it was a losing fight. For a guide in laying out the terraces we used Circular No. 290 from the College of Agriculture, University of Illinois, entitled,"Saving Soil by the Use of Mangum Terraces". We borrowed the necessary level from the city of Mt. Carmel. Three of us worked at the job.

"Three terraces were made in the field about 100 feet apart. The terraces kept the water from going down the slope and kept the soil on the field. Some shovel work was necessary to keep the water from finding low places and breaking over during the winter.

"In the spring the field was plowed and sowed to soybeans. The terraces were dragged up with a ditcher. We harvested one ton of soybean hay an acre, then disced the ground and sowed it to wheat which made 15 bushels an acre or 5 bushels an acre more than before it was terraced. There were no ditches in the field to bother us at harvesting time. With the tractor pulling an eight-foot binder we went around and around the field as if the terraces were not there. A year before this it would have been impossible because of the gullies. This past spring we terraced 25 acres more."

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"Accredited" Not Health Guarantee In Buying Baby Chicks

Now that the first shipments of baby chicks are moving through postoffices of the state, chick buyers should be forewarned that the term "accredited", as it is now used, does not give chicks nor the hatcheries from which they came a clean bill of health, it is pointed out by Dr. Robert Graham, chief in animal pathology and hygiene at the College of Agriculture, University of Illinois.

"A more important item in the future livability of the chicks than knowing whether or not they are accredited is to determine whether or not they are from tested stock and if the test was applied by a competent veterinarian. Many hatcheries in the middle west test all their egg-supplying flocks for bacillary white diarrhea and tuberculosis. Other accredited hatcheries to date have made no particular effort to establish disease-free flocks by test.

"Hence, accredited flocks in Illinois and many other middle western states are not necessarily healthy flocks nor are accredited hatcheries those which buy their eggs only from healthy flocks. In fact, accredited chicks under the system now being used in some states may be from diseased flocks.

"No plan of controlling bacillary white diarrhea or tuberculosis will be completely successful until all mature breeding stock is tested and the reactors eliminated.

"Clean houses, clean ground and clean wholesome feed complete a sanitary program which has proved its worth for keeping down baby chick losses."

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Outlook Promises No Improvement In Farm Prices For 1930

Having just about held their own during the past year, Illinois farmers can expect no improvement in prices during 1930 on the basis of present prospects, according to the annual state agricultural outlook report prepared by the College of Agriculture, University of Illinois. Earnings of Illinois farmers last year averaged, in general, just about what they did in 1928 and a little above the very low level of 1926 and 1927, the report points out. Conditions varied, however, between different sections of the state. Some improvement probably will be made during the year in domestic demand conditions which are now unfavorable. With good weather and unless smaller acreages are planted, larger crops will be harvested both at home and abroad and prices will, accordingly, tend to be lower, the report points out. Farmers should concentrate on adjusting their production to demand and on adopting low-cost methods rather than expanding their operations with the expectation of cashing in on high prices, the report recommends.

The state outlook report is based largely on the federal statement prepared by the federal department of agriculture in cooperation with 45 state agricultural colleges and the federal farm board.

Illinois farms now have fewer hogs and more cattle and sheep than a year earlier, according to the report. Supplies of hay are liberal but those of feed grain are only moderate.

Demand for Illinois farm products should be helped by some expected improvement in the present unfavorable business conditions in this country and in the principal foreign markets. On the other hand, the report continues, the increased foreign production of corn and expanding foreign production of hogs may be expected to lessen the demand for these products from abroad.

Discussing individual Illinois farm products, the report continues:

"With favorable weather and average yields, there will be larger supplies of corn, oats and barley in 1930 and lower prices than in 1929. The reduced demand for corn, resulting from a decline in the number of hogs and the lower European demand apparently has more than offset the influence of the short 1929 United States crop.

"Growers are planning too great an increase in soybean acreage this spring and if it materializes prices are likely to be lower.

"The long-time outlook for wheat is for increased production and lower prices. The rapid adoption of new low-cost methods of production in many parts of the world is responsible for this situation. The world carryover of wheat will be lower on July 1, 1930, than a year earlier, but a larger winter wheat crop is in prospect. Soft red winter wheat is likely to continue to sell at a premium compared

(Continued)

with hard winter wheat.

"The beef cattle price cycle apparently has reached its peak and the trend over the next few years will be downward. The increases that are taking place in numbers of cattle on farms are not expected to increase market receipts before the fall of 1931 and the increase may even be delayed beyond that.

"Reduced supplies and a lower demand are indicated for hogs. Prices should average as good as in 1929. The unusually heavy summer receipts which caused the market to turn down earlier than usual in 1929 are not likely to be repeated and the decline should come later than it did this past year.

"Supplies of lambs will be larger than in recent years because the tendency to hold back ewes for breeding purposes has been checked. World wool production which has increased rapidly in recent years apparently has reached its peak.

"The dairy situation is not as bad as the present low butter prices would indicate. Farmers are raising more young stock than is necessary to replace present dairy herds. Low-producing boarder cows can be sold now for more money than they can be expected to bring during the next few years.

"An increase of 5 per cent in the number of chickens on farms and larger storage holdings of poultry indicate that prices of eggs and poultry will be lower in 1930 than in 1929.

"The volume of apple production is likely to show an upward trend over the next few years and there are enough peach trees to make burdensome supplies possible whenever weather conditions are favorable to this crop."

- M -

Fear Illinois Is No Longer Free Of European Corn Borer

Illinois' days of freedom from the destructive corn borer are at an end or almost certainly will be some time during the coming season, according to a statement just released by the College of Agriculture, University of Illinois. The statement is a four-page printed circular entitled, "Corn Borer Developments During 1929", by W. P. Flint, chief entomologist of the Illinois State Natural History Survey; G. H. Dungan, of the college agronomy department, and A. L. Young, of the farm mechanics department.

"This does not mean any real change in the situation", the circular says. "It does mean, however, that if the farmers in the eastern counties are to avoid serious damage from this insect, they must adopt rotations and farm practices that will permit the plowing under or burning of all cornstalks and weeds in and about cornfields by the middle of May each year."

More intensive work than in 1928 was carried on during the past year by the College of Agriculture, University of Illinois, the State Natural History Survey and the federal bureaus of entomology and plant industry to develop better methods of control, according to the statement. Consistent and distinct progress was made in discovering the few superior producing strains of corn which have marked resistance to the borer. Further coverage studies made during the year strengthen the belief that it will be possible for farmers to keep the borer reasonably well in check without greatly increasing their investment in machinery.

- M -

Sees Superior Advantages In Plan For Cattle Futures Market

Livestock men and packers have been presented with a proposal by Professor Sleeter Bull, associate chief in meats at the College of Agriculture, University of Illinois, for a futures market in cattle which, it is claimed, would be a greater boon to American agriculture than the recent innovation of selling hogs on futures. Details of Prof. Bull's plan were worked out before the scheme of establishing a futures market for hogs was announced, but he did not get the formal proposal made in time to pre-empt the field.

Selling beef cattle in a futures or contract market would have seven outstanding advantages, as seen by Prof. Bull. It would, he said, stabilize the production of calves and feeders by providing a regular market for them, it would stimulate cattle feeding because of the insurance of profits and the ease of financing the feeding operation, increased cattle feeding would soon eliminate the corn surplus and have a bullish effect upon the prices of agricultural products generally, it would mean more business for the commission men as the details would be handled by them, the packers could so distribute their purchases as to insure themselves a regular supply of quality beef throughout the year, the price of quality beef would be more or less stabilized because there would be a more regular supply throughout the year and it would stimulate the demand for quality beef.

Under the plan as proposed by Professor Bull future markets would be established for different months for fat cattle of good, choice and prime grades. Two contract grades would be specified: choice heavy steers and choice light steers. Price differentials would be established between heifers and steers and between the different grades of each. Packers would buy for future delivery and the future market for fat cattle would thus establish the market for thin cattle. The corn-belt feeder would purchase feeders and immediately sell them for future delivery, presumably at a price which would insure him a profit.

"When the cattle reached the market, they would be graded by government graders just as grain is graded in this country or as hogs are graded in Canada. Cattle which graded choice would receive the full contract price for which they were sold. Cattle grading prime would receive a premium in addition to the stipulated price, while cattle grading good would be penalized. These differentials would be constant and would be stipulated in the rules and regulations for future trading. Cattle grading lower than good would be sold on the basis of the cash market for such cattle.

"The present cash market for cattle would in no way be interfered with by the contract market. Any feeder who preferred to take his chances on the cash market could do so."

- M -

Information Blank Will Aid Advisers In Water System Work

An information blank for the use of farm and home advisers in helping home owners with plans for water systems has been prepared by E. G. Johnson, farm mechanics extension specialist. When a home owner starts asking questions on how to install a water system it is only necessary for the adviser to hand him several of the blanks, have him fill them out and then take them to his local plumber or hardware man or write to a pump company and get definite recommendations and prices. This relieves the adviser and places the farmer in direct contact with the best source of information.

- M -

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Checkup Reveals Seed Corn Crisis Rivalling One Of 1918

A seed corn situation as grave as that in the bad year of 1918 will prevail in some Illinois counties this spring, while the whole state will be hard enough hit so that farmers should take immediate steps to make sure of a supply of seed stock. This is brought home by the results of tests completed on seed corn samples which the College of Agriculture, University of Illinois collected from 13 counties in connection with a state-wide survey of conditions, according to J. C. Hackleman, crops extension specialist.

Some of the samples were so poor that they gave only 43 per cent germination, while more than a third tested below 90 per cent, which is the minimum test on seed ordinarily considered fit to plant.

Farmers who have not tested their seed should do so at once to protect themselves against a scarcity which may develop later, Hackleman suggested. There are a number of sources of good seed in the state and farmers who find that they will need to buy should get in touch with their county farm advisers. Growers who have surplus seed should notify their county advisers so that prospective buyers can be put in touch with supplies, he said.

Buying of seed at a time like this needs to be done with caution, Hackleman has warned. Apparently there is a wild scramble for germinable seed corn throughout central Illinois. Judging from reports as to what is being purchased, it will behoove the buyer of seed to look carefully into what he is getting. In a time like this, Hackleman pointed out, buyers are inclined to give too little attention to type and to become a little wreckless in their buying, particularly if a few ears out of a crib test good.

Wet weather during the past fall followed by the extreme cold of the winter played havoc with seed corn, Hackleman explained. In many counties it is now impossible to find satisfactory seed in supplies which were picked before husking time but which were not dried artificially. Even farm storage houses which ordinarily keep seed in good condition failed their owners in the extreme conditions which have prevailed. Seed from one particular storage house is now germinating 49 per cent, whereas ordinarily this building keeps seed in such good condition that it germinates 95 to 100 per cent. The case is cited of another farmer who had 1,500 bushels of what he thought was good seed but which when tested germinated around 70 per cent. Not half of the corn in the river bottoms of Illinois was ever harvested because of rains and high water, while one county is going to need 5,000 bushels of seed corn as a result of flood conditions, according to reports to the college. Counties from which farm advisers and farmers submitted seed corn samples for the college's survey of conditions were Mercer, Hancock, Peoria, Woodford, Tazewell, Sangamon, Champaign, Vermilion, Douglas, Clark, Marion, Saline and Pope.

- M -

Fruit Outlook Puts Premium On Careful Orchard Management

A big apple crop is in sight for 1930 and this will put a premium on proper spraying and other good orchard management in order to get more high grade fruit, says the annual state agricultural outlook report prepared by the College of Agriculture, University of Illinois. The 1930 peach crop in Illinois will be of little commercial importance but future crops will depend largely upon the care the trees get during the coming season as to pruning, cultivation, spraying and fertilization, the report adds.

A good soil management program is the best way to increase the yield of No. 1 grade fruit, cut production costs and boost profits, in the opinion of R. S. Marsh, horticulture extension specialist of the college.

"Drainage and organic matter are of first importance in such a program. A water-logged soil about the roots of a peach tree eventually will kill it. Apples may withstand poorly drained soil better than peach trees but nevertheless respond profitably to good drainage.

"A sweet clover green manure crop seems to offer the best solution to the organic matter problem in modern orcharding. It is recommended that the soil of an orchard site be treated with a limestone sweet clover soil building treatment before the trees are set. On newly set orchards sweet clover can be planted in the middle of the rows with cultivation strips along the tree rows. In May of the second year the sweet clover can be turned under and a cultivated crop planted.

"In western Illinois where the buffalo tree hopper is bad a limestone sweet clover soil building plan should not be used until the trees are five years old. Sweet clover has proved a good soil builder for apple orchards regardless of their age or location. However, there has been very little testing of sweet clover in bearing peach orchards.

"At times plant food elements for fruit trees must be supplied in quickly available commercial fertilizers. Ammonium sulphate, nitrate of soda and calcium nitrate are some of the common fertilizers used to supply nitrogen, the principal fertilizer element used in orchards."

- M -

Farm Woman Stretches 200 Purchased Chicks Into 204 Fowls

Raising four more chicks than she paid for from the hatchery is the newest kink in profitable poultry raising to be introduced to Illinois flock owners. The woman who did it is Mrs. Fred Lange, a farm flock owner of Jo Daviess county, who is one of the many cooperators in the farm flock record project which the College of Agriculture, University of Illinois is carrying on throughout the state to encourage the keeping of records as a basis for studying the efficiency of farm flock production. Last spring Mrs. Lange ordered 200 chicks from a hatchery and out of this number she planned to get the 60 or 75 pullets needed to restock her flock in the fall. The hatchery donated 16 chicks for good luck. By following recommended practices Mrs. Lange actually raised 204 chicks, losing only 12 and leaving her with four more than she had ordered. One of the important points in her success was the fact that the chicks were confined to the brooder house and a wire floor outdoor porch until they were 12 weeks old.

- M -

New Dusts Beat Old Method Of Treating Oats Seed For Smut

Commercial chemical dust treatments for seed oats, two of which farmers can buy on the market this spring have given yield increases that are all the way from a half to six and a half bushels an acre bigger than those produced by the old wet formaldehyde seed treatment, according to Dr. Benjamin Koehler, crop pathologist of the College of Agriculture, University of Illinois. As compared to no treatment, the chemical dusts produced yield increases ranging all the way from six and a half to fourteen and a half bushels an acre.

Smut, which the treatments are designed to control, commonly causes losses as high as 10 per cent of the oats crop and during the past four years the college investigators have found losses ranging from 2 to 25 per cent.

Superiority of the dusts over the old wet formaldehyde treatment and over no treatment was demonstrated in tests conducted during the past two seasons by the experiment station of the college, Dr. Koehler reported. All seedings in the tests were made with a drill. In addition, tests conducted in cooperation with farmers in several counties in which the seed was broadcast. Drilling treated oats was more satisfactory than broadcasting. If it rains between the time of seeding and sprouting, it seems as though some of the treatments are less effective on broadcasted oats than on drilled oats. Treatments never should be made very far in advance of seeding, probably not more than a week before. On the other hand, seedings should never be made the same day on which the seed was treated. The seed should first stand over night or possibly several days.

One of the dusts which will be on the market this spring is a formaldehyde dust and the other is an ethyl-mercury-chloride compound. Both are sold under trade names. Dusts in general are more foolproof and convenient than the old wet formaldehyde treatment because they come prepared for use, no subsequent drying of the grain is necessary, treatment can be made several days prior to seeding and as dust treatments already are becoming standard for the treatment of corn and wheat seed, the process is simplified by using the same method and apparatus for the treatment of all these crops.

A good mixing machine which can be made by a blacksmith or which can be bought is necessary for applying any of the dust treatments. Mixing with a shovel will not do.

- M -

Canker Cleanup Checks Ruin By Destructive Apple Tree Pest

Blister canker, which has been largely responsible for the premature passing of 50,000 apple trees in one Illinois county alone during the past four years, can be successfully controlled in infected orchards only through the careful and consistent elimination of spore-bearing cankers. This has been determined for the first time in experiments carried on during the past eight years by the experiment station of the College of Agriculture, University of Illinois and reported in its most recent bulletin, No. 340, entitled, "Experiments With Blister Canker of Apple Trees". Dr. H. W. Anderson, associate chief in pomological pathology, who conducted the experiments, is author of the publication.

Cutting off diseased limbs, practiced by many orchardists, does not eliminate the disease from the tree, it was found in the experiments.

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Six Test Rations Produce No Profit On Low Lamb Market

With lamb prices the lowest they have been since 1921, not even the best of six different rations paid a profit in the season's lamb feeding experiments at the College of Agriculture, University of Illinois. All of the rations would have been even deeper "in the red" had it not been for the fact that low-priced Texas lambs were used this year for the first time in eight years of lamb feeding experiments at the college. They were bought for about $3 a hundredweight cheaper than blackfaced feeder lambs from the northwest would have cost.

Approximately 100 lamb-feeders and farmers turned out for the recent sheep day at the college to get the results of the completed experiments and pick up other pointers on sheep breeding and raising. When sold on the Chicago market the following day five of the six lots of lambs brought $11.25 a hundredweight, which was 75 cents below the day's top figure. The sixth lot was held back for further experiments.

The best ration, from the standpoint that it showed the least loss, was a hand-fed one of shelled corn, cottonseed meal and alfalfa hay. The lot of lambs fattened on this ration lost 6 cents a head. The second lowest loss came on the lot which was hand-fed on shelled corn and alfalfa hay, each of the lambs in this lot losing 18 cents. There was a loss of 27 cents a head on a lot hand-fed on a ration of half shelled corn and half whole oats for the grain feed and alfalfa hay for the roughage. Fifty cents a head was lost on a lot self-fed on ground corn and ground alfalfa hay, while this same loss had to be taken on the lot which was self-fed on ground corn, cotton-seed meal and ground alfalfa hay.

Again this year it was brought home in the experiments that the old standard ration of shelled corn and alfalfa hay is hard to beat in fattening lambs in Illinois feed lots. "The more we experiment the more we are convinced that the thing for Illinois lamb feeders to do is to use a good legume hay and shelled corn", Prof. W. G. Kammlade, in charge of sheep husbandry, told those attending the meeting.

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"Pipe Dream" Of Tuberculosis Eradication Becoming Reality

Denounced ten years ago as only a pipe dream, livestock tuberculosis eradication has since been so successful that it is reaching its goal far sooner than its most enthusiastic supporters had anticipated, J. J. Lintner, inspector in charge of tuberculosis eratication for the federal department of agriculture, Chicago, reported to the recent annual veterinary conference of the College of Agriculture, University of Illinois.

"When the project was started in 1917, cattle of the United States were harboring a general tuberculosis infection of 4.9 per cent and in many states the infection ran as high as 80 per cent in certain localities. Since then the infection among cattle for the entire country has been reduced practically to 2 per cent, two entire states are accredited, two more soon will be and the next few years will see the majority of the states in the same status."

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Peach Growers Start Building From Ruins Of 1930 Hopes

Illinois peach growers were not the only ones hit by the late January cold snap which destroyed prospects for a 1930 peach crop in this state, according to R. S. Marsh, horticulture extension specialist of the College of Agriculture, University of Illinois. Various unofficial reports indicate that the peach crop has been severely damaged in Indiana, Kentucky, Tennessee, Arkansas, Missouri, Kansas and Oklahoma, he said. No reports have been received from other states.

"What few preliminary observations have been made in Illinois indicate that there has been winter injury to wood tissues in the peach trees as well as the killing of the fruit buds. The severity of this winter injury will vary from one locality to another, but it is recommended that growers follow information which has been gathered during past years on the treatment of winter injured trees.

"Normal pruning can be given the trees if the winter injury is not severe. However, the badly injured wood should be cut out. If peach pruning can be postponed until later in the winter or early spring a more intelligent wood removal can be practiced since the winter injured parts of the tree show up more as the season advances. Winter injury on wood tissues is readily recognized by the characteristic chocolate-brown, water-soaked appearance of the injured areas. In case of doubt as to the degree of winter injury growers should postpone pruning until the trees start their spring growth.

"Since the main function of the woody tissue is to carry the water and soluble plant food it is advised that a nitrate application be given the trees just as the leaf buds are beginning to open so that the tree may be stimulated into growth and new wood formed to replace the injured areas. Theoretically the addition of nitrate will increase the efficiency of the injured wood as well as stimulate new growth. Trees that are given this nitrate application in the spring will have a much better chance to recover from winter injury than trees which are not treated with a commercial nitrogenous fertilizer. It is highly important that peach trees get a fertilizer treatment this coming spring."

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Farm Sheep Flocks Can Be Made To Pay Despite Low Prices

Good farm flocks of sheep can be made to pay even in the face of present low prices for lambs and wool, in the opinion of authorities at the College of Agriculture, University of Illinois. Improved methods which help produce these profits are to be tried out this year by flock owners in six of the biggest sheep raising counties of the state.

A meeting is to be held in each of the six counties sometime during February to explain the management of farm flocks so as to raise early lambs from them and get the most profit from them. W. G. Kammlade, in charge of the college's sheep husbandry division, is to give the instruction at each of these county schools.

The six counties in which the better methods will be pushed are Adams, Calhoun, Clark, Marion, Wabash and Wayne. There are many farm flocks of sheep in these counties and some of the men have done well in getting good incomes from their sheep and lambs. An effort will be made to standardize the methods taught at the schools so that each sheep owner may understand the plan which is likely to prove most profitable under his conditions.

"In Illinois many flock owners have found that the best plan is to have lambs born in the winter and then feed them grain as soon as they will eat and have them fat enough to sell at an early age," said E. T. Robbins, livestock extension specialist of the college. "Lambs which are sold before June 1 often bring more dollars than they ever would bring no matter how long they might be kept after that date."

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Farmers Crowd Back To School Seeking Hog Profit Secret

Possibilities of saving as much as $4 on each hog they are fattening is the drawing card which has taken Illinois farmers back to school again in overflow crowds, according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. During the winter the college is holding hog feeding schools in 32 counties in furtherance of its state-wide project on balancing corn for hogs. The biggest trouble with the schools is their popularity, according to Robbins. At several places the crowd has overrun the accommodations. On a cold day in Jacksonville when 40 were expected the crowd reached a total of 70 and packed the room so closely that the men scarcely had enough elbow room to figure out the value of different rations for hogs.

At the schools the men are learning what feeds are worth buying to add to corn and other farm grains, they are finding out why pastures in summer and alfalfa hay in winter make money on hogs, they are figuring the prices they can afford to pay for various supplemental feeds and they are learning how to save most of the money they have been spending for minerals.

It was at first estimated that $2.50 a hog would be cut from the cost of feed by many producers who took up the plan outlined at the school. The saving, however, is actually figuring out to be even more than that. At the Jacksonville school, for instance, one of the proposed rations cost $1.44 a hundred pounds of feed as compared with a ration which another man was using and which cost $1.83 for each 100 pounds of feed. The men at the school figured that the cheaper ration would save $1.76 on each 100 pounds of pork produced or $3.96 on the cost of producing each 225-pound hog that was fattened on the ration. In a school at Monticello one farmer figured that he could save $3.24 on each hog by balancing his corn with a combination of protein feeds having 44 per cent of protein instead of using a mixture having only 20 per cent protein which he had been feeding to his hogs all winter.

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Big Team Hitches Have A "Pull" As Aids To Farm Relief

Big-team hitches have a real "pull" as agents of farm relief and they are going to get a chance to use it in 20 Illinois counties this spring, according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. Campaigns to extend the use of teams of five or more horses will be put on in the 20 counties by the college extension service in cooperation with local county farm advisers.

Both valuable time and money are saved to the benefit of the farmer when big-team hitches are used, Robbins pointed out. On a quarter-section farm the operator gains two weeks of highly valuable time in the spring by doing the plowing, disking and harrowing with a six-horse-tandem team instead of the usual four-horse-abreast outfit. The bigger team likewise saves about $30 in man labor during the year, in addition to whatever profit there is in the corn crop because of getting it planted on time.

Robbins will hold a half-day school on big-hitches in each of the 20 counties before the spring work begins. The 20 counties in which the work will be carried on are Adams, Brown, Greene, Henderson, Henry, Iroquois, JoDaviess, Knox, LaSalle, Livingston, Macoupin, Mason, McLean, Morgan, Piatt, Sangamon, Schuyler, Stephenson, Warren, and Woodford.

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The Extension Messenger

COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

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Illinois Peach Orchards Can Recover From $2,000,000 Loss

Peach growers of Illinois suffered a $2,000,000 crop loss through the cold snap of late January, but in good, well cared-for orchards on good sites the chances are favorable for a complete recovery of the trees and a normal crop in 1931, provided the proper kind of care is given during the coming season, according to Dr. M. J. Dorsey, chief in pomology at the College of Agriculture, University of Illinois.

Surveys just completed by horticultural staff members in 14 peach growing counties revealed that in every orchard visited live buds were so scarce as to indicate a complete loss of the fruit crop for 1930. The same cold snap which nipped the Illinois peach crop likewise damaged the crop in Arkansas, Missouri, west Tennessee, western Kentucky, Indiana and southern Michigan, according to reports received by Dr. Dorsey from other states. The crop in the eastern coastal plain region, south and east of the Alleghany mountains, apparently escaped.

Varying degrees of wood browning have occurred during the winter even in the best cared for Illinois orchards. The browning deepens progressively to the older branches and trunk. The twigs or branches, however, have not been killed back to any extent. Under these conditions it will be best with the younger, faster growing trees to practice the normal pruning. With older trees, however, where the growth has slowed down and there is an excess of fruiting wood in the top, it would be advisable this year to make heavier cuts, in order to induce a greater growth of fruiting wood. Excessively heavy pruning or dehorning is inadvisable except where the branches have been killed back. It is best then to wait until growth has started so that the cut can be made to the last growing bud.

The most severe injury this year may be looked for on the trunk on the south or southwest side. In some of the locations, especially on the lower ground where temperatures as low as 20 to 23 degrees below zero have been recorded, this type of injury is most severe. On some trees the bark is separated from the wood a part, or in some cases all, of the way around. Where the bark is still tight the cambium does not seem to have been killed. If there are no other complications these trees will pull through.

On account of snow protection this winter there has not been much root or crown injury. This type of injury occurred during the winter of 1923-24 and was confused by some with para-dichlorobenzene injury.

An important point this season is to keep the trees in condition. Except in cases where heavy applications of nitrogen were made last year and where the carry-over influence can be depended upon, it is recommended that an application be made at the beginning of growth when the ground is warmer and when the nitrogen ordinarily would become quickly available. Nitrate of soda, calcium nitrate and sulphate of ammonia would be effective under these circumstances.

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Strip Pesky Barbs Off Barley Without Cut in Grain Yields

Those tormenting barbs on barley, which have made an otherwise desirable crop unpopular with many farmers, have at last been conquered and barley can now be grown and handled in comfort without sacrificing high yields, says O. T. Bonnett, assistant in plant breeding at the College of Agriculture, University of Illinois. Smooth-awned, or barbless, types which give high yields have been developed by plant breeders of various experiment stations, he said.

Cross-breeding, or hybridization, has been used as the means of producing smooth-awned varieties most all of which trace to Lion as one of the parents. Lion, a smooth-awned, high yielding variety, has the objectionable black kernel, but when it is crossed with white, rough-awned varieties there are produced white, smooth-awned high yielding strains.

Several promising smooth-awned strains selected out of a cross of Manchuria with Michigan Black Barbless (probably the same as Lion) are being tested at the experiment station of the University of Illinois College of Agriculture. Plant breeders at the Wisconsin station have produced Wisconsin Pedigree No. 37, at Michigan, Spartan, and at Minnesota, Velvet.

All three of these varieties when tested at Urbana in 1928 and 1929 gave a better two-year average yield than the rough-awned barleys in the same test. Wisconsin Pedigree yields 49 bushels an acre as an average for the two years, Spartan 44.2 bushels and Velvet 41.7 bushels. Michigan Black Barbless averaged 42.8 bushels during this same period. The best rough-awned varieties were Silver King and Wisconsin Pedigree No. 5, each with an average yield of 41.7 bushels.

While varieties tested only for a two-year period are recommended with reservations, the smooth-awned varieties are enough better than the rough-awned ones with which they are compared to merit trial on a small scale by farmers interested in barley growing, Bonnett said.

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Accurate Herd Records Save Necks Of Many Valuable Sires

In these days of dwindling dairy profits, dairy herd improvement associations in Illinois are saving more money than ever before for their farmer members by showing up many valuable herd sires that might otherwise be shipped prematurely to the butcher, according to C. S. Rhode, dairy extension specialist of the College of Agriculture, University of Illinois. A comparison of the records of the daughters with those of their dams shows the true worth of the dairy bull and this is one of the several services which dairy herd improvement association members get, Rhode explained.

Recently in McLean county a two-year-old heifer completed her first year's record with a production of more than 500 pounds of butterfat. A check on the records of other daughters of the particular sire in this case showed that their production ranges from 375 to 500 pounds of butterfat.

"A bull that will transmit such high and efficient production is a mighty valuable animal to own and too many of them are sold to the butcher before their true worth is known. Right now is a very important time to be guarding against this when the spread between dairy sales and cost of production is not as great as it has been. Luckily the McLean county bull is still alive and in active service. More farmers could well afford to follow the practice of hundreds of successful Illinois dairymen and keep records on their herd through the dairy herd improvement association. On the basis of such records the inefficient cows may be culled, the herd sire proved and the feeding methods checked."

Hauls and Spreads Forty Tons of Lime In A Day And A Half

At a saving both of valuable time and labor, J. B. Rice, a LaSalle county farmer living four and a half miles from a railroad, has worked out a scheme whereby he hauls and spreads a 40-ton carload of limestone in less than a day and a half with a dump truck, a manure spreader and three men, it is reported by C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois.

It takes only a few minutes to load the truck by means of a platform at the side of the limestone car. The man at the car has a load on the platform, ready to dump into the truck as soon as it returns to the car. The load is quickly transferred by tipping the platform, thus making it unnecessary for the truck to stand idle while the lime is being shoveled.

Time and labor also are saved in unloading and spreading. The truck load is dumped directly into the manure spreader, thus saving an extra handling of the limestone with a shovel. A roadside ditch is taken advantage of in transferring the load from the dump truck to the spreader. The spreader is pulled into this ditch and the truck backed up to the edge from where it is dumped.

The lime is spread while the truck is making the return trip to the car. In the meantime the man at the car has another load on the platform ready to dump. Thus the limestone is unloaded and spread with only one handling with a shovel. Rice says that the method has taken most of the hard work out of handling limestone.

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Hungry Rodents Are Now Menacing Unprotected Fruit Trees

Famished by the severe cold and heavy snows of the past two months, rabbits and mice threaten heavy damage to apple and cherry trees between now and the end of March unless fruit growers apply control measures quickly, according to G.C. Oderkirk, of the federal biological survey. He is cooperating with the Illinois State Natural History Survey and the College of Agriculture, University of Illinois in rodent control in this state.

Reports already have come in of injury by mice during the winter and further damage by these pests is likely because they have been forced to turn to apple, cherry and young shade trees for succulent food. The most effective control measures that can be put into force include supplying food in the shape of prunings from orchard trees, wrapping trees with paper or wire and the liberal use of poisoned bait to destroy the pests.

"State laws prohibit the use of poisons against rabbits and it therefore is necessary to use paper or wire protectors at the base of trees or distribute a liberal quantity of prunings, hay and grain where rabbits are attacking trees. It may be impractical to leave enough prunings to satisfy the needs of rabbits. In such a case it is advisable to sacrifice alfalfa or clover hay placed at convenient points where rabbits will find it.

"The most effective control of mice is poisoned baits scattered along surface runways, beneath matted grass and on bare ground near trees where mice will easily find it. Strychnine coated wheat, rolled oats and sweet potato bait will be eaten readily.

"Directions for preparing the baits and other information on control of field mice is found in Farmers Bulletin 1397 which may be secured from county farm advisers or from the Illinois State Natural History Survey at Urbana."

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The Extension Messenger

COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
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Warn Against Spread Of Wheat Damage By Wild Garlic Weed

Wild garlic, a weed which already is costing Illinois wheat growers $100,000 annually in the form of discounts on contaminated grain, not only is spreading north but also is becoming more serious in the infested areas of the southern part of the state, according to a warning sounded in a new circular soon to be issued by the College of Agriculture, University of Illinois. The new publication is entitled, "Wild Garlic Control in Illinois" and was written by J. J. Pieper and L. F. Rickey.

No cheap chemical control has as yet been found and eradication of wild garlic from cultivated fields by means of simple cultural practices continues to be the most practical method, according to the authors. Three practices, they say, are essential: (1) plowing the land in the fall, (2) plowing again in the spring, and (3) planting the infested area to cultivated crops and tilling these crops thoroughly with the sweep or blade type of cultivator. "These practices must be followed for at least three years on every field in order that the plants growing from the hard-shelled bulblets after delayed germination may be killed.

"Since most farmers will be unable to put the eradication program into operation on their entire farm at one time, it is advisable to select fields on which to start and let the program progress over the entire farm as facilities permit. Meanwhile the other fields may be farmed according to one of two plans: (1) a type of agriculture may be followed in which the presence of wild garlic does least damage to the agricultural products. Such a system may include horticultural crops or cultivated legumes such as soybeans or cowpeas, or cowpeas and cultivated grain crops such as corn and sorghum. (2) A cropping system may be adopted which interferes with or in a large measure prevents the production of aerial and underground bulblets. In such a rotation, spring grains may be included but not winter grains."

Cooperation of all interests is needed to solve the wild garlic problem, the circular points out. Producers of clean wheat should be rewarded by getting the full market price for clean wheat, while prices paid for garlicky wheat should reflect the actual difference in market value. The market should distinguish between garlic-tainted animal products and those free from garlic flavor. Farm advisers can help by encouraging the adoption of organized, systematic plans for the eradication of wild garlic in counties where the weed is a problem. A project for this purpose is outlined by the extension service of the College of Agriculture. The experiment station will continue its study of control methods and will also identify suspicious specimens which farmers may send in. Farmers should adopt a workable plan of control and eradication based upon the best information available and carry such a plan through to completion.

Other pointers on the control of wild garlic and the handling of garlicky wheat are included in the circular which is No. 352 and which may be obtained upon request to the University of Illinois, College of Agriculture at Urbana.

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Printed in furtherance of the Agricultural Extension Act approved by Congress May 8, 1914. H. W. Mumford, Director.

White Sweet Clover Leads Five Legumes As Profit Yielder

As a money maker, biennial white sweet clover topped four other soil building clovers compared for green manuring purposes on the light colored soils of southern Illinois during the past three years, according to C. J. Badger, associate in soil experiment fields at the College of Agriculture, University of Illinois. The comparisons were made on the college's soil experiment field near Ewing.

The yields of wheat, corn and oats following the biennial white sweet clover had the highest money value, but red clover was a close second. The money value of the yields produced by the use of Hubam or annual sweet clover, alsike and yellow biennial sweet clover ranked close together but somewhat lower than that of red clover.

In comparing the clovers, separate catch crop seedings of the five different legumes were made in wheat in the early spring of one year, allowed to grow through the remainder of the season and then plowed down green for corn the following spring in a rotation of wheat, corn and oats. All five of the clovers, except the Hubam or the annual sweet clover, produce green growth to plow down in the spring of the second year. The Hubam matures and dies at the end of the first season.

The three-year average shows that common biennial white sweet clover produced the highest corn yields of any of the legumes or 17.7 bushels an acre. The corn yields in the case of the other clovers were 15.4 bushels after red clover, 15 bushels after alsike, 13.4 bushels after yellow biennial and 12 bushels after Hubam.

The average yields of two wheat crops were highest following the Hubam and lowest following the biennial white and yellow sweet clovers. Wheat yields following alsike and red clover were a little lower than after Hubam.

The average yield of two oat crops were highest following yellow biennial sweet clover, with yields from alsike and red clover a very close second and from Hubam and white biennial sweet clover lowest.

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Costly Cold Snap Will Save Expense Of Spraying For Scale

"It's an ill wind that blows nobody good."

Extreme cold weather of January, which practically wiped out the 1930 commercial peach crop in Illinois, will save the cost of applying a dormant spray for the destructive San Jose scale in orchards north of a line drawn across the state from St. Louis, Mo., to Centralia, according to a report which W. P. Flint, chief entomologist of the Illinois State Natural History Survey, has just made to the College of Agriculture, University of Illinois.

Recent examinations have shown that in that section of the state north of the designated line less than 2 per cent of the San Jose scale is alive. This is as good a kill as is usually obtained by spraying and it is doubtful therefore if a dormant scale spray will be necessary in orchards north of the line, Flint pointed out.

The percentage of live scale increases gradually from the Centralia line on south. In the Ashley-Centralia region there is from 2 to 4 per cent of the scale alive, according to counts made by S. C. Chandler, assistant entomologist of the survey. Sixteen per cent of the scale is alive at Carbondale and 40 per cent in the extreme southern peach growing districts.

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"Peanut Stand" Farms Have Little Chance To Pay Profits

A surprisingly large number of Illinois farms yield a total annual income of less than $3,000 each and it would be as hard to get rich operating some of them as it would operating a peanut stand, according to Prof. H. C. M. Case, head of the farm organization and management department, College of Agriculture, University of Illinois. The point is, he explained, that some farmers are doing too small a business to make a satisfactory income.

When the income is no larger than $3,000 a year, current operating expenses, mortgages or interest on the investment eat up so much of the fund that there is not enough left for a good standard of living, he declared.

"One of the important weaknesses on many farms, especially those under 160 acres, is that the right things are not being produced to bring in a good sized income. This does not necessarily mean that farms smaller than 160 acres must be larger in order to be profitable. Throughout Illinois it is more important for many farmers to increase the income from each acre rather than add to their acreage.

"For example, the man on an 30-acre farm who has perhaps four-fifths of his land in corn and oats which are sold on the market is pretty definitely limited as to the size of his income. The adding of alfalfa, soybeans or even a small acreage of truck crops where there is a local demand for such products may help add to the income.

"Of still greater importance, however, is the production of livestock which will utilize labor during the winter as well as increase the value of the crops grown. Dairy cattle and poultry provide one of the best means of increasing the volume of business on small farms because they give a large return for the amount of feed. Frequently a man does not like to handle livestock and does not have the market for the more intensive crops. Under such circumstances, he may well consider operating a larger unit.

"Farmers might better the organization of their farms by sitting down at the beginning of the year and listing the products they expect to raise and the amounts they can expect under normal conditions."

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More Than Three-Fourths Of 18,454 Club Members Finish Job

Enriched by more than a half million dollars, 14,670 of the 18,454 rural youngsters enrolled in boys' and girls' 4-H club work carried their farming and homemaking projects through to completion to make 1929 a record year in club work in Illinois, according to reports just compiled by club leaders at the College of Agriculture, University of Illinois. The year showed an increase of 4.1 percent over 1928 in the percentage of club members finishing their work when almost four-fifths, or 79.5 percent, of the enrolled members completed their endeavors. Also there were 298 more local clubs in 1929 than in 1928 and 3,532 more members enrolled. Ninety-two of the 102 counties of the state were represented among the 1,364 local clubs which were active during the year. Incomplete county reports on 11 of the 16 projects offered to club members showed an estimated financial value to the youngsters of $479,980.55.

In eight different counties, 100 percent of the boys' club members completed their projects, according to the report of E. I. Pilchard, boys' club specialist. They were Madison, Mason, Moultrie, Stark, Brown, Carroll, Franklin and DuPage. Perfect records were recorded by girls' club members in six counties, according to Miss Mary E. McKee, girls' club specialist. They were Effingham, Gallatin, Greene, Madison St. Clair and Clinton. Vermilion county led all others in enrollment for the year with a total of 964 members, 200 of whom were in girls' projects.

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Breed Up Promising Strain Of Spring Wheat At U. Of I.

A promising strain of high-yielding, scab-resistant spring wheat which seems to be well adapted to a large part of the spring wheat growing area of Illinois has been isolated and is now being tested by the experiment station of the College of Agriculture, University of Illinois, it is announced by Robert E. Fare, assistant in plant breeding.

The new strain, called Illinois No. 1 B, has been a higher yielder than Marquis, one of the commonly grown varieties, and shows a much greater resistance to scab than either Marquis or Garnet under Illinois conditions. In tests thus far the Illinois No. 1 B has shown less than one-third as high a percentage of scab infection as Garnet.

The strain will be thoroughly tested again this year and the seed increased. If it continues to perform well, it probably will be ready for distribution in the spring of 1931.

In the three years that the Illinois No. 1 B has been tested here at the Urbana field it has yielded an average of 27.1 bushels an acre with 7.5 per cent scab infection. During the same period Marquis has given an average yield of 23.3 bushels an acre with 18.5 per cent scab infection. Garnet has averaged 27.1 bushels an acre with 21.5 per cent scab infection.

During the two years the Illinois No. 1 B has been grown at the DeKalb crop experiment field it has yielded an average of 29.4 bushels an acre with 16.3 per cent scab infection, while Marquis averaged 25.1 bushels an acre with 29.5 per cent scab infection. Garnet made 31 bushels an acre with 54.3 per cent scab infection.

The Illinois No. 1 B originated from what is known as a mass selection nade from the Illinois No. 1 variety. The Illinois No. 1 variety, which has been grown at the Illinois station since 1915, was a mixture of white and brown chaff types. The white chaff type also has been isolated by selection and has been designated as Illinois No. 1 A. This strain has yielded about like the Illinois No. 1 B ut is more susceptible to wheat scab.

- M -

New Sheep Manual For 4-H Clubs Aims At High-Class Flocks

Aimed at the development of high-class flocks by farm boys and girls, a anual for 4-H sheep club members of the state has just been issued by the extension ervice of the College of Agriculture, University of Illinois. Popularity of sheep aising increased among Illinois farm boys and girls last year, there being 314 mem-ers enrolled in sheep clubs in 25 counties as compared to 183 members the previous ear. W. G. Kammlade, in charge of the college sheep division, and E. I. Pilchard, oys' club work specialist, are authors of the new manual.

- M -

Printed in furtherance of the Agricultural Extension Act approved by Congress May 8, 1914. H. W. MUMFORD, Director.

Tests Explain Why Fruit Species Differ In Adaptability

The first comprehensive comparisons of the rate of transpiration, or loss of water, in different fruit species, just completed at the experiment station of the College of Agriculture, University of Illinois, shed new light on some of the hitherto unknown reasons why fruit species differ in adaptability and response to cultural conditions.

The comparisons were made by V. W. Kelley, associate in pomology, and are reported by him in a new experiment station bulletin, "A Comparison of the Transpiration Rates of Twenty-One Deciduous Fruit Species". Practically all species of fruits commonly grown in Illinois were included in the comparison.

Transpiration rates of the 21 species showed wide variations and, what was more significant, transpiration rate and drouth resistance were found to be correlated, Kelley reported. That is, those species which transpired very slowly are considered drouth resistant by close observing horticulturists, while those which have a high rate of transpiration are said to be non-resistant to drouth.

Whether or not transpiration is a measure of drouth resistance is a question on which scientists have heretofore been about equally divided, but results of the Illinois investigations definitely settle the point so far as fruits are concerned, it was said.

The findings have some significance in fruit growing practice and would have a bearing on the recommendations involving locality, site and cultural operations for the various fruits, Kelley pointed out.

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"Bad Luck" No Farm Bugbear If Machines Are Ready For Work

Bad luck gets credit for too many of the costly breakdowns and delays which occur in farm field work every spring, in the opinion of R. R. Hudelson, extension specialist in farm organization and management at the College of Agriculture, University of Illinois. Often it's bad preparation rather than bad luck that's to blame, he says. Machinery that is fixed in advance seldom has to stop for repairs when the good days for farm work are here, he pointed out.

"Any one who still doubts whether or not it pays in dollars and cents to have machinery all ready and waiting for the starting gun in the spring should consider the case of a western Illinois farmer who has earned more than 7 per cent on his investment as an average for four years. He is one of the most successful account keepers in his section of the state and one of the things that has helped him get there is a good system for avoiding loss of time when the weather is right for work. He tags every machine when it comes in from the season's job. On this tag he writes what the machine needs in the way of repairs. The winter season and rainy days provide the time to make all the repairs listed and the machine is left repaired, clean, oiled and ready when the weather man says go. Just to make doubly sure, this farmer has a shop where the common tools are kept ready for a quick repair job. In an orderly set of pigeon holes he keeps a supply of all the common sizes of bolts and nails, each size to itself and all arranged so as to be found without loss of time. As might be expected, his farm shows a high degree of efficiency in the use of labor, power and machinery. Last year he raised 111 crop acres a man, 48 crop acres a horse, and his machinery and equipment expense totaled only $1.68 an acre. This included repairs, depreciations and machinery supplies such as motor fuels and oils."

- M -

Annual Grape Pruning Best Done Before Buds Start Swelling

Grapes must be pruned every year if good crops are expected and now is the time to do it before the buds swell, it is recommended by Dr. A. S. Colby, chief in small fruit culture at the College of Agriculture, University of Illinois. The job should be done even after the buds swell rather than not done at all.

The Kniffin system is the best to use. The four-cane system is recommended for all ordinary conditions, but the six-cane probably will give the best results if the vines originally were planted too close and if the variety is a strong grower in a fertile soil. The four-cane system consists of a two-wire trellis with the wires about three to five feet above the ground on which the fruiting canes are trained in either direction. The extra wire necessary for the six-cane system should be placed about a foot and a half above the one just below it. The canes should originate within eight inches of the trunk. From four to six, depending upon which system is being used, should be selected and cut back to leave a total of from 40 to 80 buds on the vine, depending upon the variety, the vigor, soil conditions and the system which is being used.

In addition, three or four short canes, or spurs, about two buds long and arising close in at about the level of the wires should be left at pruning time. Shoots which will grow from buds on these spurs may be used as fruiting canes the next season. This is called the long-cane renewal method.

If the vines produced a large number of very vigorous shoots, as measured both by length and diameter, the previous season it is an indication that they were pruned too heavily. More buds should be left at pruning time this year. The number may be doubled over that of last year in most cases. Where a good many shoots resulted from the past season's growth which ripened out to the end but did not make an excessive growth either in length or diameter, the same number of buds should be left as before. If a high percentage of canes of low vigor is found on the vines, fewer buds should be left and the vine thus given a chance to regain its balance.

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Tools Of New And Improved Models Banish Aches From Gardening

New and improved models of hoes are even being brought out now and with the improvement in the design of this and other tools much of the ache in garden work can be banished, according to B. L. Weaver, of the horticulture department, College of Agriculture, University of Illinois. The feel of the improved hoe is entirely different from that of old style ones and its ease of operation and effectiveness are admitted by experienced gardeners. A much narrower blade and a change in the cutting angle give the increased efficiency.

"It is admitted that the rake and hoe should be a part of every gardener's equipment, but the greatest pleasure and effectiveness remain undiscovered by the amateur who has not used the wheel hoe. The large wheel types are easier to operate, but are not as efficient and do not allow as close cultivation as machines with wheels of smaller diameter. These machines are well worth while for the smaller types of gardens if a saving of time and labor is desired. Horse drawn tools are advocated for saving time and labor in the farm garden. Such gardens frequently are cultivated with riding cultivators, the shields being used when the plants are still small. As the plants grow, cultivation with tools of this sort becomes increasingly difficult. One of the best implements for such work is a one-horse cultivator with adjustments for depth of culture and width of row. A few large shovels are not as good on this type of cultivator as a number of small ones."

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The Extension Messenger

COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

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Illinois Farms Make Nitrogen Fertilizer Worth Millions

Illinois farms loom up as huge manufacturing plants in the light of figures showing that last year more than 100 million pounds of nitrogen fertilizer having a commercial value of between $20,000,000 and $30,000,000 was produced on farms of the state through the growing of a record crop of 750,000 acres of sweet clover. The figures were compiled by C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois.

Nitrogen is needed for grain crops on practically all Illinois soils and sweet clover is a cheap source of this plant food, Linsley pointed out. Through the nodules on its roots, sweet clover gathers nitrogen from the air and when the crop is plowed under or pastured, this nitrogen is added to the soil. Thus a fertilizing element which would cost from 20 to 30 cents a pound if bought on the market can be had in unlimited quantities and free of charge from the air. An acre of good sweet clover contains 150 pounds of nitrogen, enough for 100 bushels of corn.

"Rapid increase in the use of sweet clover during the past ten years shows that farmers have been quick to see the value of this crop. In 1920 but 70,000 acres were grown in the state. The amount has increased rapidly each year since then and in 1929 reached the record of 750,000 acres.

"Last year 12 counties in the state each grew more than 15,000 acres of sweet clover. One county grew 30,000 acres last year, or one acre for every eight of cropped land. This was Grundy county. Farmers of this county have learned that a legume such as sweet clover must be grown regularly on the land if profitable crop yields are to be produced.

"This increase in the acreage of sweet clover has brought about a rapid increase in the tonnage of limestone used in the state because farmers realize that limestone is needed on much of their land before sweet clover can be grown successfully."

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Three Illinois 4-H Club Girls Names For Free Summer Trips

Three farm girls out of the 9,455 enrolled in girls' 4-H club work in the state have been selected on the basis of their outstanding records for free trips to national and international 4-H club events to be held this summer in the east, it is announced by Miss Mary A. McKee, girls' 4-H club specialist of the College of Agriculture, University of Illinois.

Catherine Sullivan,21 years old, of Knox county, will be the state's official delegate to the international 4-H leadership training school to be held at Camp Vail, Springfield, Mass., for two weeks beginning September 7. Joe Hardy, 19 years old, of Hancock county, and Mildred Mies, 18 years old, of Livingston county, are to be the Illinois girls' club representatives at the fourth national 4-H camp to be held June 18 to 24 at Washington, D. C.

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Farmers Take To Horses To Get Advantage Of Grain Prices

With present low prices of corn, oats and hay favoring the man who farms with horses, interest in this type of power is picking up among Illinois farmers, according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. He has just concluded a series of meetings held in 19 counties for the purpose of instructing farmers who are acting as local county leaders in the big-team project which the college is carrying on in the interests of more economical use of farm power. Almost 600 project leaders and their neighbors turned out for the sessions.

"Those attending the meetings reported fine success with the new system of combining more horses into one team and driving them easily with only two lines on the leaders. Men told of plowing one or two acres more a day with their old gang plows after replacing the four-abreast hitch with one which avoids side draft and thereby saves about one-fifth of the power. They told of farming a quarter section all alone or a half section with only one hired man.

"There was general agreement that farming with horses is economical both in overhead and operating costs. Some men told of managing their horses so as to have no depreciation in teams. They mentioned very small investments in equipment for horse farming. Some of the men remarked that summer pasture at night and during periods of idleness and also stalk fields, straw stacks and a little legume hay in winter reduced the cost of feeding teams to a very low figure. In nearly every meeting some one mentioned that the man who farms with horses or mules deserves credit for patronizing his own industry and helping to furnish a home market for surplus corn and oats."

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Heavy Pruning Is Good Exercise But Wipes Out The Profits

Too many orchardists still prune as if they were doing it for exercise rather than for profit, in the opinion of V. W. Kelley, of the pomology division, College of Agriculture, University of Illinois. They cut instead of prune, he explained.

Pruning increases profits by lengthening the life of the tree and improving the marketability of the fruit. Pruning should aid the tree to form a strong framework capable of bearing maximum crops over a long period. The essentials in the formation of such a framework are: (1) limiting the number of framework branches to five or six and spacing them vertically six to twelve inches apart on the trunk, and (2) the selection only of wide-angled branches for the permanent framework.

In trees five to fifteen years old pruning should be done with a light touch and should be limited to such cuts as are necessary to maintain the permanent framework to remove water sprouts and suckers and to thin out an occasional branch in particularly thick portions of the top.

To prune intelligently and profitably, it is necessary to know some of the principles involved. It is definitely known, for example, that pruning dwarfs both the branch that is pruned and the tree as a whole. This is true because it reduces the leaf surface which is the tree's manufacturing plant for food materials.

Another principle is that pruning the young apple tree delays its coming into bearing and reduces the yield. Studies made by the experiment station of the college of agriculture show conclusively that pruning apple trees that are just coming into bearing postpones profitable production. The reduction in yield is proportional to the severity of the pruning. Unpruned trees come into bearing sooner than those which have been pruned annually.

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Erosion Most Destructive To Farm Lands In Spring Months

Soil erosion, which annually causes millions of dollars worth of damage to farm land, will get in some of its most destructive work during the coming spring months, unless farmers follow a plan such as the one used by C. W. Holmes, a Peoria county farmer living near Edelstein, it is pointed out by E. G. Johnson, farm mechanics extension specialist of the College of Agriculture, University of Illinois. Erosion must be especially guarded against in the spring because of heavy rains and the fact that most of the land is in a cultivated state.

Holmes hasn't plowed over the ditches in his fields for the past five years. He realized that every time he plowed them the dirt would wash out and leave the ditches deeper than they were before. He plans to seed them to timothy and let them go back to sod, which is probably one of the best plans for preventing ditch erosion.

"Holmes has gone far toward preventing serious sheet erosion by keeping the fields in cover crops and maintaining the organic matter in the soil. However, the best way to stop sheet erosion and also prevent the further washing of ditches is to terrace the entire field. Detailed information on terracing is given in the college's circular No. 290, Saving Soil by Use of Mangum Terraces.

"In another field Holmes has worked out a system of successful soil-saving dams. The tile had been washing out in places and so he put in some cheap concrete soil-saving dams. By doing the work himself and using his own gravel he built them at low cost and in a surprisingly short time they were silted full.

Cheap dams can be made from such materials as hog wire, brush and rock. The main thing to remember in building dams of this sort is to keep the center of them low so that the water will flow over there rather than wash around the ends. Farmers Bulletin No. 1234, entitled, Gullies - How to Control and Claim Them, which can be secured from the United States department of agriculture, Washington, D. C., contains some valuable pointers on building dams".

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Early Pigs "Catch The Worm" In The Form Of Added Profits

Like the early bird that catches the worm, early-farrowed spring pigs have, since the war, been paying from 75 cents to $1 a hundredweight more profit than late spring and early summer pigs, according to R. H. Wilcox, of the farm organization and management department, College of Agriculture, University of Illinois. The added profits come from the fact that the September market, on which the early pigs are sold, has been higher than the November, December and January markets for the late pigs, he explained.

"The earlier they come the better" has, accordingly, come to be the slogan with hog men who plan to raise spring pigs, Wilcox reported. Farm cost studies made by the college show that there is a good foundation for this general belief among farmers.

"During the months of October, November and December since the war, corn hogged down in the field cost late pigs about 14 cents a bushel less than old corn fed to September pigs. When this advantage in price of corn was balanced against the fact that these late pigs took more corn it was found that late spring pigs can make their pork cheaper than the early pigs. But cheaply made pork is not always the most profitable. Prices since the war on the November, December and January hog market have been so far below September, on the average, that early-farrowed pigs have shown from 75 cents to $1 a hundredweight more profit than late spring and early summer pigs."

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Isolate Organism Implicated In Costly Poultry Disease

Discovery and isolation of a pathogenic organism which causes at least one type of infectious fowl bronchitis, long the most destructive menace to the extensive poultry fattening industry of the corn belt, has been announced following seven years of research by Dr. Robert Graham and his associates in the division of animal pathology and hygiene at the College of Agriculture, University of Illinois. The organism, a pleomorphic, or changing, coccus, or pearl-shaped germ, has never been described before so far as the investigators know.

It is not claimed that the organism is the only factor involved in the disease, for the reason that environmental conditions under which the malady occurs naturally have not been reproduced artificially to the point where the acute type can be reproduced consistently.

So deadly is the bronchitis disease that it has been known to wipe out 500 fowls in one poultry fattening plant in a single night. It is not only the fatalities, however, which have caused the inestimable losses suffered by the thousands of fattening stations scattered throughout the corn belt. In order to escape a heavy death rate among their birds, operators of poultry feeding plants have been compelled to cut their feeding period in half. This has resulted in their producing a lower quality dressed fowl with a consequent cut in profits.

The disease produces an inflammation of the larynx and upper trachea accompanied by profound symptoms of toxemia and depression and difficult respiration resulting in death in acute cases.

In addition to isolating the organism the investigators found that the disease is not a bronchitis, as is popularly supposed, but a laryngitis. It also was learned that the disease occurs in a sub-acute, or mild, form which heretofore has not been recognized as associated with the malady. Recognition of this form of the disease is important in its ultimate control.

Those associated with Dr. Graham in the discovery and isolation of the organism were I. B. Boughton, E. A. Tunnicliff, and E. C. McCulloch, former members of the animal pathology and hygiene division, and Frank Thorp, Jr., and W. A. James, assistants in the division.

No serum or vaccine has as yet been prepared with which to combat the organism, but this and other phases of the problem are still under investigation. In the meantime, poultry raisers and feeders must place chief reliance upon rigid sanitation of their farms and plants and isolation of suspected fowls, Dr. Graham said.

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Dairy Cows Must Be Three-Tonners To Pay Profits Now

It costs the dairyman from $125 to $175 a year to keep a cow under present conditions and at current prices any "bossy" that isn't turning out well above three tons of milk a year is a money loser, according to figures compiled by Prof. H. C. M. Case, head of the farm organization and management department, College of Agriculture, University of Illinois.

On the basis of annual keeping charges ranging from $125 to $175 a year, a cow giving only 5,000 pounds of milk in 12 months would be producing it at the rate of about $3 for 100 pounds. A cow with a record of 8,000 pounds, or four tons, might keep her costs down to less than $2 a hundred. Many farmers are now getting less than $2 net at the farm for 100 pounds of milk after the costs of hauling are deducted.

"With the present price of cattle on the market, this is a good time for dairymen to dispose of cows that are such poor producers that they have no chance of returning a profit.

"In addition to wide variations in the production of cows, there are wide variations in the cost of producing milk from cows giving the same amount of milk. The conditions which cause these variations in cost are largely under the control of the dairyman. Out of more than 200 full-year records which the college collected on dairy herds, examples were found where the feed cost was $30 more a cow for some herds than it was for other herds having about the same average production of milk. Feed makes up about one-half the cost of keeping dairy cows, hence the home production of feeds needed for properly balancing the rations of the dairy herd is of great importance.

"The cost of labor was more than twice as high on some farms as upon others with cows of like production. Some herds were handled so that the heifers coming into the herd replaced older cows with no depreciation, while in some herds where cows were kept to an old age and had to be sold at a low price, depreciation alone amounted to $25 to $35 a year for each cow in the herds. Variations occurred also in the other items of cost, such as the expense of the barn and other equipment, veterinary charges and general expenses. The cost of depreciation, upkeep and the annual costs on barn alone was $10 a cow higher on some farms than on others."

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Poultry Prices May Be Held Down If Expansion Proceeds

Low price levels for poultry and poultry products face producers as a result of present indications of expansion and increased production, according to F. E. Elliott, assistant in poultry husbandry at the College of Agriculture, University of Illinois. This danger, against which flock owners of the state were first warned in the college's 1930 agricultural outlook report for Illinois, has just been brought home again in estimates of commercial hatching compiled by the federal department of agriculture.

Figures collected by the department and reported to the college indicate that the number of young chicks hatched in January of this year was about 25 per cent larger than in January, 1929. Firms reporting to the department also stated that their advance bookings up to February, 1930, for chicks to be delivered during the year were about 44 per cent greater than similar bookings at the same date last year. Hatcherymen expected total hatchings to be about 17 per cent larger than in 1929. "These figures are not meant to, nor should they, cause the steady producer to go out of business, but they should be considered carefully by any one intending to make a big increase in their production."

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Corn Stocks Small But Little Ahead To Increase Demand

While present holdings on corn both for the country and for Illinois are relatively small and probably will leave no large carryover at the end of the year, there is little in sight to indicate a rapid expansion in the demand for corn, in the opinion of L. J. Norton, assistant chief in agricultural economics at the College of Agriculture, University of Illinois. His observations are based on reports from the federal department of agriculture as to corn on farms on March 1.

For the country as a whole the holdings are about 25 million bushels less than the average of the past two years when there were small year-end carryovers. In Illinois the holdings are about 5 million bushels larger than last year and 40 million bushels larger than the very low figure of two years ago.

"In spite of a short national crop and carryover of corn, prices are low and have been dropping off fast in the past few weeks. Part of this has been caused by the widespread business depression and the general tendency for prices of goods established in open markets to decline. It also reflects the fact that consumption of corn has been considerably less during the past winter than in either of the two previous years. One thing that has contributed to the decline in consumption is that there were about four million fewer hogs on farms in the United States on January 1, 1930, than a year earlier. Cattle feeding operations have not been on a large scale. Liberal supplies of hay have held down consumption of corn.

"Of particular interest to Illinois is the fact that the market movement has been less than a year ago. The large stocks of wheat in terminal elevators have prevented central market interests from accumulating corn in large quantities. Exports of corn have been negligible, amounting only to 3 million bushels for the four months ending in February, as compared to about 29 millions for the same period a year earlier. European crops of corn were larger in 1929 than in 1928 and Argentina is reported to have a bumper crop to harvest this spring. Corn products plants, which make up the largest single cash market for Illinois corn, report that they used 15 per cent less corn from November through February than they did during the same period a year ago.

"One factor which eventually will make for a higher level of corn prices is the fact that the relationship between corn and hog prices is now definitely favorable to hogs. This sooner or later will stimulate an increase in numbers of hogs which will absorb any surplus corn and establish a better balance between corn supplies and demand."

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Spread of Wild Garlic Adds To Problem Of "Onion" Cream

Spread of the wild garlic weed in Illinois makes it more important this spring than ever before that farmers and dairymen guard against an onion flavor which will contaminate the milk and cream if their cows eat this weed, it is pointed out by Dr. H. A. Ruehe, head of the dairy department, College of Agriculture, University of Illinois. Wild onion, another weed which appears every spring in many localities, is just as bad.

Creamerymen usually pay less for onion cream than for clean-flavored cream, because just a little of it will spoil a large churning of butter. Consequently all such off-flavor cream must be carefully graded out at the creamery. Taking cows off onion- and garlic-infested pastures four or five hours before milking helps to overcome the bad flavor, but it is best to inspect the pastures carefully in the spring and fence off the infested parts.

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Illinois Farmers Lead In Probing Their Business

Keenly alert to better business methods, more farmers in Illinois than in any other state had 1929 accounts on their entire business analyzed in a standard accounting service supervised by the various state agricultural colleges, it is reported by R. R. Hudelson, extension specialist in farm organization and management at the College of Agriculture, University of Illinois. Although the service is available in nearly all states, Illinois has held the lead for several years, he said.

Already 1,900 have checked in their 1929 accounts for auditing by the farm organization and management department. It is likely that this number will go to 2,000 before the season's work is completed. More than 1,500 of these accounts were kept in connection with the college's statewide extension project on account keeping, while about 400 were kept by members of the special farm bureau-farm management service in Woodford, McLean, Livingston and Tazewell counties.

Interest of Illinois farmers in better business methods is still growing as fast as at any time in the 15 years since the college began to offer its assistance along these lines, according to Hudelson. This is shown by the fact that 744 farmers recently have been helped to start accounts for the first time. In all, during the past three months members of the department have visited 95 counties of the state checking accounts with farm operators and helping new account keepers start their records.

Work of closing and analyzing the nineteen hundred 1929 accounts already received at the college was started in December as soon as the first accounts were available. Eight hundred sixty-five books already have been returned to the farm bureau offices or to the individual farmers. Each book when completed carries a summary of the year's business giving an analysis of the investment, income and expenses and a statement of net income, rate earned on the investment and the realized value of the farm operator's labor and management for the year.

Later each farm operator completing his 1929 accounts will be visited by one of the college representatives who will bring with him a final statement on the year's business. This report is set up in such a way as to show how the individual business differed from that of other farmers in the same locality for the same year and what changes would be most likely to improve the net earnings of the particular business. In the past this has led to better incomes on the great majority of those farms where an attempt has been made to correct weaknesses revealed in the accounts.

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Illinois has at least 17 common plants which are poisonous to livestock and if the loss from these is only one-fifth as much as from plant poisoning in western regions the total would run to three and a half million dollars annually, according to Dr. J. J. Pieper, assistant chief in crop production, at the College of Agriculture, University of Illinois.

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"Filling" Livestock Defended As User Of Surpluses

Far from being an absolute waste as if often claimed, the practice of "filling" livestock before it is sold might be a real help right now in relieving grain surpluses if even more feed were used in making the "fill", it is pointed out by R. C. Ashby, livestock marketing specialist of the College of Agriculture, University of Illinois.

"Filling", or feeding at the market, is really but an equalizer of the shrinks which always occur when livestock is moved from farm to market, no matter what the method. In order to get a normal selling weight, stockmen allow their animals feed and water at the market before they are weighed. If no feed were allowed at the stockyards some hogs would be sold empty, some partly filled and others full. Despite years of discussion no other simple and satisfactory method has been developed.

"Under one plan of marketing which is used considerably, hogs are unloaded from the cars, are given access to water but get no feed before weighing. The advantage claimed is the economy to the shipper in saving the price of the corn which is commonly fed.

"One stockman who checked up on more than 40 cars of hogs found that the water fill alone averaged about 185 pounds a car. When six bushels of corn a car was fed, in addition to free access to water, he got about 275 pounds more fill a car. In a recent test at the South St. Paul market by the North Dakota Agricultural College more than 11,000 hogs were weighed right off the cars, empty, and these weights compared with the sale weights later. Results showed that the increased weight due to corn and water consumed at the yards paid for all terminal marketing expense, including yardage, feed, commission and similar items, and left $41.70 a car, besides.

"Whether a water fill or water and corn is more satisfactory, stockmen must decide for themselves, taking into account all factors involved. When there is any doubt, the safest plan is to check up by comparing actual weights under the two plans. Accurate scales are, of course, necessary, in getting the right answer."

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Overtaxing Roots Shortens Life Of Asparagus Patch

The secret of long life and those all-important profits in the case of an asparagus patch is bound up in the roots, according to L. H. Strubinger, of the horticulture department, College of Agriculture, University of Illinois. Asparagus that is harvested this spring, he explained, will draw heavily upon the reserve food supply that was stored up in the roots of the plants during last year's growing season, rather than taking the necessary plant food elements from the soil. If the roots and plants are to remain strong enough to produce the desired crop year after year for a long period, it is essential that good cultural practices be used, he pointed out.

"Heavy manuring long has been depended upon to furnish the necessary plant food. The manure preferably should be put on late in the fall, but if it is not added then it should be spread very early in the spring. As soon as the ground is in condition to be worked, the manure should be thoroughly disked into the soil. To control weeds and keep the soil from getting badly packed another thorough disking should be given the whole patch immediately following the cutting season.

"A recent practice in many sections is to depend upon commercial fertilizers. A mixture of 400 pounds of nitrate of soda, 300 pounds of superphosphate and 260 pounds of muriate of potash an acre has proved enough in many areas where asparagus is grown on rather light soils. The commercial fertilizers should not be applied until toward the close of the cutting season."

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Girdling Damage On Fruit Trees Healed By Grafting

Fruit trees in all parts of the state have been badly girdled by rabbits and other rodents during the past winter but they can be saved by bridge grafting, according to R. L. McMunn, of the pomology division, College of Agriculture, University of Illinois. The best time for doing the grafting is after the bark readily separates from the wood but before the leaves are pushed out.

"The idea in this type of grafting is to bridge over the girdled area and again establish connective tissue between roots and branches. Shoots of the past season's growth should be used for the bridges. These shoots are known as scions. Water sprouts are most satisfactory. Under normal conditions placing the scions two inches apart around the trunk will be enough to save the tree and keep it in good production for years.

"Around the edge of the girdled area, remove the bark as far as necessary to reach healthy, undried or uninjured bark. At each point where the end of a scion is to be inserted make a small slit through the bark. These slits should extend back an inch from the edge of the freshly exposed bark and should be parallel with the trunk. Slits in the lower and upper edges of the bark around the injured area should be in pairs, that is, one in the upper edge above one in the lower edge. It is under these slit places that the end of the scions are to be inserted. Placing the slits in pairs will insure having the scions parallel with the tree trunk.

"Scions to bridge over long areas should be cut long enough so that when they are pushed in place under the bark of the tree they will form an arch. After being cut to the proper length, the scions should have a smooth, even taper from one to one and a half inches long cut at each end. The tapered surfaces on the ends should face in the same direction, so that they will fit flush with the trunk. Bark on the back side of the tapered ends should be shaved off.

"With the tapered surface of the scion next to the tree wood, the base end is pushed down between the bark and wood of the tree. With the base end held in place, the upper end is inserted under the upper one of the pair of slits. To make sure that the scion is secured in place, a small brad is driven through the tree bark, scion and into the tree wood. The entire grafted area and the exposed wood on the trunk should be covered with grafting wax. When cracks show up the surface should be rewaxed."

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Big Profits Sell Fruit Growers On Improved Methods

Money not only talks but also convinces, it has been concluded by R. S. Marsh, horticulure extension specialist of the College of Agriculture, University of Illinois. Last year E. A. Wiegand, a Du Page county farmer and fruit grower, followed some of the college's recommendations on improved orcharding methods and spent $66 for materials in spraying his three-and-a-half-acre apple orchard five times. The result was that he sold $1,300 worth of apples at his front door.

This year when Marsh went back to Du Page county in the interests of improved fruit growing methods, a record crowd of 117 farmers turned out to attend a pruning demonstration on the farm of Fred Keller, near Downers Grove. This is the largest crowd which has ever attended a pruning demonstration given by Marsh in his several years of work in the state. As a result of the big crowd in Du Page county, the week's total of farmers and growers who got pointers on pruning for better yields and higher quality was 342. A total of eight demonstrations was staged by Marsh in DuPage, Knox, Peoria, Woodford and Tazewell counties.

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Soybean Growers To Meet At U. Of I. In September

Picking the leading soybean state for the event, members of the American Soybean Association will hold their eleventh annual meeting at the College of Agriculture, University of Illinois, September 10, 11 and 12, it is announced by Dr. W. L. Burlison, president of the association and head of the college agronomy department.

Illinois, which last year grew more than 20 per cent of the country's soybean crop, last entertained the annual meeting of the society in 1921 when the second annual conclave was staged here.

Officers of the association will be in charge of arranging the program and organizing delegations of visitors from their respective sections of the country. The group of officials includes, vice-president, Prof. F. S. Wilkins, of the Iowa State College of Agriculture and Mechanic Arts, Ames; secretary-treasurer, J. B. Edmonson, farmer, Clayton, Ind., and executive committeemen, Roy Chasteen, farmer, Crothersville, Ind.; Dr. W. C. Ethridge, College of Agriculture, University of Missouri; Harvey Clapp, farmer, Accotink, Va.; and Prof. J. B. Buchanan, Ontario Agricultural College, Guelph.

Industrial utilization of soybeans so as to expand the markets for the crop will be among the important problems on which stress will be laid during the annual meeting, according to Pres. Burlison. An attempt is being made to sign up speakers of national importance for this phase of the program.

Soybean production and feeding work on the 1,000-acre experimental farm of the college will be billed as another attraction on the program. There will be tests and comparisons of more than 75 important varieties, studies on date, rate and method of seeding and investigations of inoculation and harvesting to hold the attention of the nation's soybean growers.

Big-scale methods practiced by some of Illinois' leading soybean growers will be the occasion for special tours during the meeting. A trip will be scheduled to the farm of W. E. Riegel, near Tolono, where the visitors will get to inspect 600 acres of soybeans and study various methods of seedbed preparation and other corn belt practices with the crop. On the John T. Smith farm in the same community the growers will have an opportunity to see various makes of combined harvester-threshers in operation.

An effort is being made to get some special exhibit material from the Orient, native home of the soybean, for a special feature of the meeting.

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Illinois Hen Struts Earning Power Of $35,000,000

Tiny though she is, the Illinois farm hen and her 25 million sisters last year would have paid net profits totalling $35,000,000 if all of them had lived up to their opportunity, according to a report by H. H. Alp, poultry extension specialist of the College of Agriculture, University of Illinois.

Net profits at the rate of $1.40 a hen, or a total of $55,972, were paid during 1929 by the hens on 216 farms whose operators cooperated with the college extension service in keeping accurate flock records, Alp reported. Interest, labor, feed and all other costs were paid in addition to the net earning of $1.40 a hen.

Unfortunately, not all hens in the state paid as well as those in the 216 demonstration flocks which, in the main, are handled according to the latest improved practices in breeding, feeding and management, Alp explained. Even within the 216 flocks there was a wide range of earnings. The best one-third of the 216 flocks paid net profits of $2.77 a hen, or almost twice as much as the average for the whole group, while the poorest one-third of the flocks netted their owners only 14 cents a hen. This was $2.63 a hen less than the average for the best one-third and $1.26 a hen less than the average for the whole group.

The average return for each hour of labor was 82 cents for all 216 flocks, $1.53 for the best one-third and 30 cents for the poorest one-third.

One clue to the wide difference in earning power of the different flocks was found in the number of eggs laid by each hen and the selling price of the eggs. The average for the whole group was 126 eggs a hen, as compared to 136 for the best one-third of the flocks and 112 for the poorest one-third. The average selling price a dozen of eggs was 33 cents for all flocks, 37 cents for the best one-third and 30 cents for the poorest one-third.

The average number of hens in each of the 216 flocks was 164, a figure which varied but little in the case of the best and the poorest one-third of the group. Owners of the better flocks did, however, weed out their birds more carefully. The percentage of hens culled was 47.8 per cent a flock in the case of the best one-third of the flocks, 44.7 per cent in the case of the 216 flocks and 43.3 per cent in the case of the poorest one-third. The investment varied little between the three groups, being $4.83 a hen in the case of the 216 flocks, $5 a hen for the best one-third and $4.92 a hen for the poorest one-third. The poor flocks used just as much feed as the good ones. Total feed costs for each hen averaged $2.32 a hen for the 216 flocks, $2.31 a hen for the best one-third and $2.33 a hen for the poorest one-third.

- M -

New Feeding Tips Help Herd Owners Weather Prices

Hundreds of Illinois dairymen are successfully coping with present lower prices for dairy products by using better feeding practices picked up at winter dairy cattle feeding schools held throughout the state by the extension service of the College of Agriculture, University of Illinois, according to a report of results. Herd owners who attended are cutting their costs, saving in their feed bills, building up the production of their cows and otherwise putting their new-found information to good use in the present situation, according to C. S. Rhode, dairy extension specialist who had charge of the schools. The case is cited of one DeKalb county dairyman who cut 22 cents off his feed cost of producing 100 pounds of milk and 5 cents off his cost of producing a pound of butterfat without increasing production. He simply changed his ration and fed his cows according to the way they were producing.

Orchardists Warned Against Outbreak Of Apple Scab

Apple growers in Illinois are facing an epidemic of the destructive apple scab disease which will lower the quality and value of their 1930 crop unless every effort is made to combat the outbreak, according to a warning by Dr. H. W. Anderson, associate chief of pomological pathology at the College of Agriculture, University of Illinois.

A combination of circumstances during the summer of 1929 paved the way for the threatened epidemic this spring, he reported. The disease is fairly easy to control, but the sprays must be applied at the right time and thorough coverage must be obtained, Dr. Anderson pointed out.

"Four lime sulphur sprays used at the rate of 2 gallons of the concentrated commercial liquid to 100 gallons of water should be applied. The first should be put on when the fruit buds are showing pink, the second when the petals are two-thirds off, the third one week after the petals fall and the fourth two weeks later than the third.

"A number of growers are using other types of spray materials which perhaps cause less injury to the fruit but do not give as good control. The finish of some varieties of apples is seriously marred by lime sulphur sprays, in which case milder sulphur spray materials should be substituted. If growers wish to try other spray materials they should first consult the experiment station."

The epidemic of scab which is threatened for this spring dates back to the spring of last year when a severe outbreak occurred as a result of excessive rains and cold weather, Dr. Anderson explained. Following failure of the fruit to set in many sections of the state, growers abandoned spraying for economic reasons. As a result, heavy leaf infection occurred later in the season and these infected leaves will be the source of millions of spores for "seeding" the leaves and fruit this spring.

If apple growers can keep down the scab epidemic they are in a fair way to realize a profit on their 1930 crop, according to Dr. Anderson. Despite the prospect of a heavy crop, good prices should be realized for high quality apples in this section of the country because the peach crop has been destroyed by the cold weather, he pointed out. However, poor quality fruit probably will go begging for a market and apple scab is one factor which will lower quality.

The disease also seriously injures the trees by reducing the available leaf surface for food production. Last year many young orchards just coming into bearing formed no fruit buds for the 1930 crop due to the reduction of leaf surface through scab infection.

- M -

Growers Cheered As Fruit-Nipping Cold Kills Bugs

Illinois growers can console themselves with the fact that the winter's cold snaps which played havoc with the 1930 fruit crop also thinned out the insect enemies of the state's orchards, according to a report to the College of Agriculture, University of Illinois by S. C. Chandler, assistant entomologist of the Illinois State Natural History Survey. Among the many destructive pests of the state's fruit growing industry which were hard hit by the extreme cold was the Oriental fruit moth, a newcomer in Illinois peach and apple orchards and a target for federal control measures.

- M -

The Extension Messenger
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Timely Notes for Farm Advisers and others from the Agricultural College, Experiment Station, and Extension Service
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"Convenience" Of Livestock Trucking Costs $400,763

Trucking rather than rail shipping more than a million head of livestock to the Peoria, East St. Louis and Chicago terminal markets in 1927 cost Illinois farmers $400,763, all of which must be charged up to the "convenience" of truckage, according to a bulletin just issued by the experiment station of the College of Agriculture, University of Illinois, on a study of livestock truckage rates in the state.

In the space of a single year, 1928 to 1929, there was a 35 per cent increase in the number of livestock trucked to the three markets and the problem of necessary adjustments between truck and rail transportation is a basic one to the livestock industry of the state, it is concluded by R. C. Ashby, associate chief in livestock marketing, who conducted the study. Results of the study suggest that the best service is not necessarily truckage all the way from farm to market but that it often may be a combination of rail and truck, he added.

Convenience and greater flexibility of movement were found to be the two main reasons for the growing use of truck transportation. In the majority of cases the actual cost of truckage was higher than shipment by rail.

More than 34 cents a head would have been the apparent net saving possible in marketing livestock by rail instead of by truck, on the basis of the 1927 truckage and freight rates, according to the bulletin. The saving on the basis of December, 1928, truckage rates would have been 24 cents a head. On the basis of 34.4 cents a head, the saving in favor of rail shipments would have been $400,763 on the 1,115,606 head of livestock trucked to the three markets in 1927, it was pointed out.

After all other factors are accounted for, the net difference between the cost of the two methods of transportation measures the cost of convenience of shipping by truck, it is explained in the bulletin.

"A downward tendency in truckage rates on livestock is indicated by a comparison of 1927 rates with those of December, 1928. Further shifts in rates will depend largely upon the possibility of further reduction of the actual costs of operating trucks, development of a larger back haul business and the adoption by truckmen of adequate records of their respective operating costs. Stockmen will not benefit from truckage rates that are too low to support efficient and dependable truck service."

That the entire livestock marketing system may be changed by the increasing use of motor transportation is a possibility which stockmen are beginning to realize, according to Ashby. Trucking, for example, may be encouraging the establishment of innumerable small markets at the expense of the present terminals; probably it has already accelerated direct marketing; it may tend toward decentralization of the packing industry; it has impeded operation of local cooperative livestock shipping associations, and yet, if properly used, it could well contribute to an effective farmer-owned and controlled livestock marketing system, Ashby explained. Railroads, it would seem, should be interested in the new transportation problems confronting livestock shippers but as yet they appear to have taken little active part in their solution, he added.

- M -

New U. Of I. Process Improves Even Well-Bred Corn

Hidden faults and weaknesses lurking even in "well-bred" varieties of corn can be extracted painlessly to the benefit of yield and other desirable characters in a new process which is being successfully demonstrated by the plant breeding division of the College of Agriculture, University of Illinois. While the work has not gone far enough to justify any definite conclusions, the method does show promise of making the term "well-bred" more meaningful, according to W. J. Mumm, instructor in plant breeding.

Self-pollination is the key to the process, it was explained by Mumm. By this process of breeding it is possible to analyze individual ears of corn and bring out both the good and bad points of the variety involved. Some ears are found which show no abnormalities and which perform better than others in the field. Seed from such ears is mixed together to form a "remodeled", or reconstituted, strain.

As commonly grown by farmers, corn is widely crossed, experiments showing that there is 5 per cent or less of natural self-pollination, according to Mumm. As a result an infinite variety of abnormal types are not seen by the farmer, although the factors for them are present in his strain of corn.

Not until the variety is subjected to self-pollination do those abnormal and undesirable types appear. After one year of selfing they show up in large numbers. Often the selfed ears show defective seeds. Some of these seeds have nothing but a seed coat and are not filled with starch at all, others may have an endosperm but are germless and can not grow. Some kernels do not have a resting stage, but begin to germinate on the ear before harvest. Among the plants themselves the most common abnormalities that appear are those associated with a lack of chlorophyll, the green coloring matter of the plant. The majority of such plants die in the seedling stage. Other ears produce dwarf types that form little, if any, seed. Other abnormalities show up after the seedling stage. Plants from some ears produce no pollen, some no shoot, while some plants have neither tassel nor shoot. Some plants are golden in color and others striped. In addition to the abnormal types, many others are found that are undesirable because they are weak rooted, weak stalked, smut susceptible, late maturing or low yielding. All ears producing these abnormal and undesirable types are, of course, eliminated when the reconstituted, or "remodeled", strain is formed.

- M -

Soil Guessing Too Expensive For Bureau County Farmers

Having set themselves to knock the guesswork out of soil treatment, Bureau county farmers are in the midst of a county-wide soil testing program under the direction of Farm Adviser W. W. Wilson and the extension service of the College of Agriculture, University of Illinois, it is reported by C. M. Linsley, soils extension specialist. The project is expected to pay profits in the form of savings on clover seed, limestone and phosphorus and better all-around crop yields.

First steps in the campaign were taken recently when 16 farmers who are acting as soil project leaders in the 21 communities of the county met with Farm Adviser Wilson for a soil testing school. They learned how to test 640 acres of their own land for acidity and available phosphorus and to draw maps of their fields showing where limestone and phosphate were needed to jack up crop yields. Having been instructed at the school, they will assist Farm Adviser Wilson in a series of soil testing meetings to be held in various communities of the county this spring.

- M -

Illinois Nut Growing Stifled By First-Year Hazards

Despite the spur of increased interest on the part of prospective growers, nut growing in the northern states is making slow headway because few of the trees live longer than the first year after they are transplanted, according to Dr. A. S. Colby, chief in small fruit culture at the College of Agriculture, University of Illinois. Most of the failure in transplanting nut trees trace to the use of wrong practices, he said.

"In the first place, when nut trees are transplanted the tops must be cut back severely, at least one-half, to make up for the loss of roots in digging. Neglect of growers in doing this has resulted in the loss of many nut trees at transplanting time. Furthermore, when the trees are received from the nursery they either should be heeled in or put in a cool cellar until the ground is ready for planting. Often it is a good plan to immerse the trees, roots and all, in a long trough filled with water and leave them there for a few hours before transplanting.

"Planting should not be done when the ground is wet; neither is it desirable to use water in the holes as the trees are being set. It is preferable to plant in rather dry soil, tamping the dirt well about the roots to keep out air spaces.

"The hole should be dug deep enough and wide enough to accommodate the roots without crowding or bending them upwards. The tree should be planted at least as deep or even an inch deeper than it stood in the nursery. If the soil is poor at some depth, only good top soil should be used in filling in about the roots. Manure or concentrated fertilizer, such as nitrate of soda, should not be used in the hole near the roots. A couple of handfuls of bone meal or tankage may, however, be mixed with the soil about the roots.

"After the tree is set and while the hole is being filled, a basin-like depression may be left at the base of the trunk to be filled with water. A mulch of strawy manure may be used to advantage about the trunk, especially the first season. Another method of getting enough water close to the roots is through the use of a small drain tile placed in an oblique position and sunk to its depth close to the trunk. The tile should be filled with water occasionally during the dry season. Surface watering is not recommended.

"Recent investigational work has shown that it is helpful to paint the entire trunk and branches of the tree with a thin coat of melted paraffin at the time of planting to prevent excessive loss of moisture until the roots can begin to function properly."

- M -

Thousands Of Farms Tighten Efficiency With Big Teams

So popular have big-team tandem hitches become as economical power units that last year 34,000 Illinois farmers worked at least one team in front of another for plowing and other field work, it is reported in a revised edition of the free farmers' circular, "Big Teams on Illinois Farms", just issued by the College of Agriculture, University of Illinois. About 5,700 of these farmers used larger hitches than they had used two years before, it is pointed out by E. T. Robbins, livestock extension specialist and author of the new publication. This, he said, marks a great change from conditions existing a few years ago when the usual outfit for plowing, disking and harrowing was the power-wasting team of four horses abreast. Directions for arranging the big-team hitches, tips on saving time in harnessing and pointers on selecting the lead-team horses are given in the circular. It is illustrated with 38 photographs to bring out the various points.

- M -

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"Quick Freezing" May Revolutionize Meat Industry

Great changes, which some have gone so far as to predict will be revolutionary, will be brought about in the meat industry by the recently introduced "quick freezing" method of preparing and distributing meat products, according to Prof. Sleeter Bull, in charge of the meats division of the College of Agriculture, University of Illinois.

Under the new method, retail cuts of meat such as chops, steaks and roasts are quickly frozen at extremely low temperatures ranging from 10 degrees below to 50 degrees below zero, according to the process used. The cuts are made up into attractive packages, usually with a transparent wrapper, with the net weight, the name of the cut, the brand or grade of the meat and the name of the packer printed on the outside.

The new method does not use the recently introduced "dry ice" principle, but the details of the process are being kept secret by packers, according to Prof. Bull. Retailers handling the quick-frozen products can do so with their ordinary coolers, although freezers are better.

One advantage of the new method to the producer is seen in the fact that it widens the outlet for cuts of choice meat. In practically every small town, Prof. Bull explained, there are a few families who would buy choice cuts of meat if they could. Because of the small demand, however, it is impossible for the small-town butcher to handle the choice grades under the old system.

The retailing of quick-frozen meat does not require the services of a high priced meat cutter, Prof. Bull explained. The neighborhood grocery, the delicatessen, the drug store and even the filling station may handle it, according to Prof. Bull. Since the name of the cut, its weight and its quality are stamped on the original package, the housewife in buying meats is no longer at the mercy of the unscrupulous or ignorant butcher, "of whom, unfortunately, there are a few", Prof. Bull said.

Most of the big packers have begun to sell frozen meats and many of the smaller ones are experimenting or watching the experiments of others, it was reported.

Quick-frozen meats will keep indefinitely in the frozen condition and the quality is claimed to be as good as that of the fresh product, according to Prof. Bull. In fact, some claim that the freezing process makes the meat more tender. The freezing is done so quickly that only very small crystals are formed within and around the cells of the meat. The cell walls are not broken and when the product is thawed there is only a very slight leakage of juices, no losses in flavor or food value, and no change in the appearance.

Methods of quick-freezing have been used successfully in the fish industries for years. The plan also is being used for certain fruits, such as strawberries, red raspberries, loganberries and cherries, and for certain vegetables, such as peas, spinach and asparagus.

Printed in furtherance of the Agricultural Extension Act approved by Congress May 8, 1914. H. W. MUMFORD, Director.

Long Study Upsets Old Beliefs About Sweet Clover

Some of the old beliefs about both the good and bad points of sweet clover have been upset by the experiment station of the College of Agriculture, University of Illinois during its collection of what is probably the most extensive set of facts on the pasturing of this popular legume. The facts were compiled in connection with studies on the summer maintenance of beef cows.

One of the first things the study did was to refute the frequently-heard claim that sweet clover is an uncertain crop, according to R. R. Snapp, associate chief in beef cattle husbandry. Beginning with 1915 the station has sown sweet clover each spring in small grain, principally oats, and in 12 out of 15 years has succeeded in getting a stand of clover good enough to be left for pasture. The experience of those years has shown that when the soil has been limed and the seed properly inoculated, sweet clover may be relied upon for pasturing livestock during the late spring and early summer of the second year.

It also was found that nothing is gained by turning cattle onto sweet clover pasture during April as is often advised by men with little sweet clover experience who fear that the crop will get rank and woody unless closely grazed from the time growth starts in the spring. During the 12 years the average grazing season for second-year sweet clover was found to be from May 11 to August 15, a period of 96 days.

A third point brought out was that the carrying capacity of sweet clover has been grossly exaggerated by some advocates of this forage crop. It is true that a field of good sweet clover will afford more grazing than an equal area of almost any other kind of common pasture. Nevertheless, seldom during the 12 years was it found advisable to stock the sweet clover pastures with more than one cow and calf an acre. The fields were typical corn belt land to which both limestone and phosphate had been applied. In addition as much barnyard manure as could conveniently be plowed under was applied every four or five years.

Clipping the clover about June 1 was found to be of no advantage from the standpoint of improving the quality of the pasture or prolonging the grazing season. Little difference was noted between clipped and unclipped parts of the field as to the time of blossoming and ripening of the seed.

- M -

Evening Up Stand Cue To Profit For Bean Growers

Higher and more profitable yields of soybeans could be harvested by Illinois farmers if the stand were more uniform in the field, according to results of studies by the plant breeding division of the College of Agriculture, University of Illinois. Two varieties, Manchu and Illini, planted in rows with a four-row bean drill were studied.

Getting a more uniform stand is largely a mechanical problem of getting a more uniform distribution of seed, it was concluded. One thing that affects the flow of seed through the drill is the physical condition of the soil. If it is in good condition the drill will draw evenly and jarring will be minimized. On the other hand, if the surface is covered with clods or ridges and there are low places, the drill can not run evenly, there will be much jarring and consequently a patchwork of thick and thin seedings over the field. In making the study of stand, 100 one-foot sections were staked off in each of the two varieties in random fashion and counts made of the number of plants in each one-foot section. In the Manchu variety the number of plants a food varied from 1 to 11 and in the Illini from 1 to 15, with averages of 5.33 and 7.59 plants, respectively. Thus there were thick and thin patches in the rows.

Find Short Cut To $250 More Profit A Car On Hogs

A short cut to added profits of $250 on a carload of fat hogs has been figured out by farmers in 11 Illinois counties where the extension service of the College of Agriculture, University of Illinois held swine feeding schools during the past winter. Stockmen attending the schools calculated that between the best feeding plan and the most expensive rations which different farmers proposed at the schools there was an average saving of this much in the cost of raising a carload of hogs.

The 11 counties were among 35 in which the hog feeding schools brought a total of 2,143 farmers up-to-date pointers on more economical and profitable feeding systems. Members of the college animal husbandry staff served as instructors. E. T. Robbins, livestock extension specialist, worked in 28 of the counties; Dr. W. E. Carroll, chief in swine husbandry, in four of them, and G. E. Hunt, a member of the swine division, in two.

Before the series of schools started, Robbins had estimated that many farmers could save $2.50 a hog by figuring more carefully on the feed. In the 11 counties there was time enough to do some comparative figuring between different rations the men were using. The average saving on a 225-pound market hog by using the most economical ration amounted to $3.39. On a carload of 75 hogs the total saving would be $254.25.

Importance of balancing home-grown grain with moderate amounts of suitable feeds supplying protein at a low cost a pound was stressed at the schools. It was found that the largest hog raisers were the quickest to appreciate this principle. In McDonough county, for instance, the "honor roll" hog raisers, who use both sanitation and economical feeding, raise an average of 234 hogs a year, while the others reported an average only of 146.

The 35 counties in which schools were held were Kane, Scott, Greene, Lee, Bureau, Mercer, Ogle, McDonough, Adams, Schuyler, Morgan, Woodford, Sangamon, Macon, Fulton, Hancock, Peoria, Stark, Henderson, Warren, Knox, Henry, Iroquois, Livingston, LaSalle, Vermilion, JoDaviess, Stephenson, Brown, Cass, Menard, McLean, DeWitt, Mason and Piatt.

- M -

Can't Top Record Corn Yields With Usual Plant Rate

Illinois farmers can't beat the world's record yield for corn by planting the crop at the usual rate of two grains a hill in rows 42 inches apart each way, according to George H. Dungan, assistant chief in crop production at the College of Agriculture, University of Illinois. The plants have to be thicker than this to make efficient and profitable yields of 100 bushels or more an acre, he pointed out. Three times this usual rate is how thick the world's corn-yield "king", Ira C. Marshall, Ada, O., plants his corn, according to Dungan. Last year he got a little more than 176 bushels an acre on a ten-acre field. He planted thick enough to get a stand of from four to five plants a hill in rows 32 inches apart one way and 34 inches the other way. This means 25,943 plants an acre. When corn is planted at the usual rate of two grains a hill in rows 42 inches apart each way there are only 7,112 plants an acre. It takes lots of moisture and plant food materials, however, to nourish 25,943 plants an acre, Dungan pointed out. "There is no best rate of planting that can be recommended for a farming region. The best rate in one field may not be the best for the adjoining field. For instance, in the college's northwest rotation of corn, soybeans, potatoes and alfalfa the highest yield was obtained with four stalks a hill. In the south central rotation of corn, corn, corn and soybeans the highest yield was produced by two stalks a hill."

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Urges That Cost Of New Tool Be Checked Against Need

Inventories in machinery and equipment have gone up fast on many farms during recent years and thereby saddled the owners with a heavy burden of expense at a time when incomes have been limited, it is pointed out by R. C. Ross, of the farm organization and management department, College of Agriculture, University of Illinois. This is a good thing to remember, now that the opening of spring work has raised a question in the minds of many farmers as to how much new equipment they should buy for the season's work, he said.

"More than one question must be answered in counting the cost of new equipment. Will it serve many uses or is it limited to a single operation or for a few days? When equipment has a small amount of use the overhead cost is likely to be high in relation to the amount of use. Are the available power, labor and shelter sufficient for the new equipment? When definite information is lacking, careful estimates furnish a good working basis. What will be the annual cost for depreciation or wear? This may be determined by dividing the original cost of the equipment by the number of years which it may be expected to last. How much interest would be secured on the invested capital if it were put to other uses? What will be the current operating costs for fuel, repairs, supplies and the like?

"Efficiency as well as economy must be considered. If the new equipment is bought can more land be handled with the same amount of help or the same land tended with less outlay for hired labor? Will new equipment displace less efficient power or machinery units and thus be a saving or will it cause good machinery now on hand to be scrapped at a loss? Will doing the work more nearly at the right time increase the amount or quality of the product for sale? Will larger power units eliminate some operations in field work and thus make a saving? Will the new types of equipment give an opportunity for custom work from which a direct income is secured?

"The decision whether to buy machinery or equipment can be made only after weighing the benefits against the costs. The farm as a unit rather than a single operation forms the basis for this decision. Records of the use and cost of equipment of similar kinds on other farms may furnish a dependable basis for judgment."

- M -

Four Selected From 9,000 4-H Boys For Prize Awards

A quartet of the most outstanding farm boys among the 9,000 junior 4-H club members of Illinois have been named by E. I. Pilchard, boys' club specialist of the College of Agriculture, University of Illinois, for the annual awards of free prize trips and scholarships. Lewis Butzow, 20, of Milford, and George A. Doole, 20, of Adams, will be the Illinois boys' club representatives for the fourth national 4-H club camp to be held June 18 to 24 on the grounds of the federal department of agriculture in Washington, D. C. The honor of being the state's boys' club representative at the international 4-H leadership training school, Camp Vail, Springfield, Mass., September 7 to 20, went to Ralph W. Bivin, 21 years old, of Palmyra. Ralph B. Feverly, 17, of Decatur, was awarded the Baltimore and Ohio railroad scholarship of $100.

- M -

Two-Thirds Of Sick Fowls Carry Profit-Knocking Worms

About two-thirds of the mature fowls sent to the experiment station of the College of Agriculture, University of Illinois for diagnosis are infested with profit-cutting worms, it is reported by Dr. Frank Thorp, Jr., assistant in animal pathology and hygiene.

"Chickens harbor two general kinds, roundworms and tapeworms, both of which cut egg yields, sap the vitality of the fowls and make them lose flesh. Lowered vitality in infested fowls often paves the way for other infectious diseases to gain a foothold.

"The two chief causes back of the heavy infestation in Illinois flocks are overstocking ground and the practice of free range, or the use of poultry grounds year after year without proper rotation.

"Worm medicines are not wholly effective because they do not destroy the eggs of the parasites and furthermore they give the owner a false sense of security which often leads to neglect of essential sanitary measures. Clean ground, or poultry sanitation, is better than medicine in preventing worm infestation. Such sanitation consists of clean houses, clean feed and water and clean ranges. Clean ranges are best provided by a double yarding system, the lots being rotated from year to year and properly cropped the year when they are not being used for chickens.

"Since symptoms shown by poultry are very misleading, an autopsy is necessary for an accurate diagnosis in case of worm troubles. The local veterinarian is best qualified to render such service.

"There are two species of roundworms which locate in different parts of the fowl's digestive tract. The large roundworm is found in the intestine back of the gizzard. The small roundworm lives in the ceca or blind pouches.

"Tapeworms are flat, segmented, ribbon-like organisms which by means of hooks and suckers attach themselves to the intestinal wall. They vary in size from several inches down to microscopic forms."

- M -

Farmer Hits Trail To Win Followers For Lime, Legumes

Determined not to keep a good thing to himself, Charles Anderson, an Iroquois county farmer, is counting on having 17 limestone and legume "converts" to his credit at the end of the season, according to C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois. Himself a believer in the profit-making powers of lime and legumes, Anderson has persuaded 17 of his neighbors to go together on a carload of limestone with each one taking from two to four tons. This they will spread on "sour" land where corn is to be planted this year and where small grain and clover will follow next year. The limestone plots, Linsley explained, will be valuable to the 17 farmers and to their neighbors, as well, in proving the value of limestone for growing clovers and the value of clover on grain crops which follow. The idea is part of the program which the Iroquois County Farm Bureau is carrying on in cooperation with the agricultural college extension service to promote the use of limestone and the growing of legumes for soil improvement. The plan was decided upon a year ago this spring. At a meeting of the 19 soil project leaders of the county, it was decided that each leader would attempt to get a number of his neighbors to go together on a carload of limestone for demonstration purposes. Anderson was the first of the leaders to get the necessary orders for a carload.

- M -

Good Tile Drainage Gives Farmers Edge For Season

Spring is the time of the year when farmers with tile-drained land get the jump on their neighbors because their fields dry out earlier and may be prepared and planted more nearly at the proper time, it is pointed out by E. W. Lehmann, head of the farm mechanics department, College of Agriculture, University of Illinois.

"The advantage extends throughout the season. If a row-crop is planted, it may be cultivated much more quickly following a rain than it could if the field were not well drained. On many farms there are small wet spots of a few acres which delay or inconvenience the work in getting the seed bed prepared and the field planted. Wet spots in a field also interfere with harvest.

"There is more moisture available on soil that is properly drained than on soil which is poorly drained, and the dangers of a dry spell later in the season are eliminated to a large degree when the fields are drained. This is due to the fact that a deeper root zone is provided with good under-drainage. Since roots extend to a greater depth, the plants are damaged less by the effects of dry weather. Soils that are well drained are more absorptive and more of the water which falls on the land is stored for future use.

"Land that is carefully drained is not subject to erosion to the same degree as land poorly drained due to greater absorption. After all, it is the water which discharges over the surface which causes soil washing. When there is good under-drainage soil washing may be at least partly eliminated.

"On well drained land there is very little heaving, due to the action of the frost, while on poorly drained soils, due to greater moisture, freezing and thawing will heave and damage the crops. This damage is especially noticeable in wet spots in a field of winter wheat."

- M -

Calves On Pasture Need Grain To Pay As "Baby Beeves"

Beef calves that are being turned out now to run with their dams on pasture need grain in addition to their mother's milk and grass if they are to be quickly fattened into profitable "baby beeves", according to W. B. Young, of the animal husbandry department, College of Agriculture, University of Illinois. They should be taught to eat grain before they are turned out so that they may be fed in a "creep" while running with their dams during the summer, he said.

"The creep for the calves after they are put on pasture should be located near the source of water and should be large enough to accommodate all the calves at the same time. A long box or trough may be used in which to place the feed but a self-feeder will save time and labor and have no ill effects on the calves.

"A good mixed ration to feed calves in a creep on pasture is 4 parts corn, 3 parts oats and 1 part linseed or cottonseed meal, by weight. A calf does not relish a feed which sticks to his mouth and tongue as well as he does one more coarse which he has to chew. Hence it is not necessary to grind the corn fine but merely crack it coarsely so that the calf may chew it easily. Likewise the pea-sized cottonseed or linseed meal is preferable to the finely-ground. The oats may or may not be ground, as either way is satisfactory."

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The Extension Messenger

COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

Volume XIII May 7, 1930 Number 19

Soybean Crop Costs $24 An Acre on Illinois Farms

Soybeans, the crop which has had a rapid rise in Illinois during the past few years, costs about $25 an acre to grow in the central part of the state, according to figures just announced by R. C. Ross, of the farm organization and management department, College of Agriculture, University of Illinois, following a two-year study on 182 farms.

This cost, which is based on the 1928 and 1929 crops, includes pay for the farmers' own time at hired man's wages, the use of power and machinery, the cost of seed and inoculation, twine, harvesting, meals, overhead, taxes and interest on land value. There were slight variations in the figure depending upon whether the crop was threshed, combined or put up for hay. The acre cost of $25 compares closely with that of corn.

The 182 central Illinois farms which were included in the two-year study grew a total of 8,543 acres of soybeans, or an average of 47 acres a farm. Approximately 28 per cent of this acreage was harvested with the binder and thresher method, 62 per cent was combined and 10 per cent cut for hay.

Of the total cost of $25 an acre, $9 went for preparation of the seed bed, seeding and cultivation, seed and inoculation. Costs of harvesting the crop and delivering the grain varied somewhat with the method of harvesting, but amounted nearly to $6. Taxes and interest on land accounted for the rest of the cost, or more than $10 an acre.

Yields for the two years were the highest on record, averaging 22 bushels an acre for those cut and threshed and a little more than 23 bushels for the combined beans. Acre costs varied but little with differences in yield, but the higher the yield the lower were the bushel costs. Average bushel costs varied from $1.04 to $1.07 in 1928 and 1929, depending upon the method of harvesting. In years with lower yields the bushel cost would have been higher. If no allowance were made for the feed or fertility value of the straw, the bushel cost could be calculated by dividing the acre cost of approximately $25 by the number of bushels an acre. On this basis 20-bushel crop would cost $1.25 a bushel, a 17-bushel yield $1.47 a bushel and a 15-bushel harvest $1.67.

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New Followers Flock To Swine Sanitation System

Having won more new followers, the swine sanitation system advocated by the College of Agriculture, University of Illinois is being used by nearly half the 2,143 farmers who attended hog feeding schools which the college held in 35 counties during the past winter, according to a report by E. T. Robbins, livestock extension specialist. This marks a steady increase in the popularity of the simple plan of raising pigs without ever letting them get wormy, Robbins pointed out. Two years ago the estimates of county farm advisers indicated that about 9 per cent of farmers used this plan. Only in five counties was the estimate as high as 50 per cent.

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Lack Of Plan Most Wasteful Fault In Farm Drainage

More money is wasted on farm drainage through failure to have a complete definite plan for the entire layout than in any other way, according to Prof. E. W. Lehmann, head of the farm mechanics department, College of Agriculture, University of Illinois. It is all right to do the job a little at a time, but the part which is put in should fit into the plan of the whole layout, he pointed out.

"The first thing is to size up the outlet and the entire area to be drained. In addition, any fields which discharge water on to the land to be drained must be considered. Otherwise the main tile outlets and sub-mains are likely to be too small. The outlet may be an open ditch, a natural stream or a larger tile.

"Size of the main tile depends upon the slope as well as upon the area to be drained. The slope must be determined and then the size of the tile figured by means of proper tables and other information. This work is best done by an experienced drainage engineer.

"Size of the laterals is not calculated. It has been found that a 5-inch lateral is better than the smaller sizes. Few drainage engineers recommend a smaller size than this except for short laterals of a few hundred feet, for which 4-inch tile may be used.

"In tight soils laterals are spaced closer together and not so deep as in the more open soils. The common spacing of laterals is from six to eight rods apart with an average depth of three feet. From the standpoint of economy it is desirable to use reasonably long laterals. The maximum length ordinarily recommended is about one-quarter mile.

"Care must be taken to see that all the tile are placed on a uniform grade. Where the land is very flat it is sometimes necessary to place the upper end of the lateral near the surface to get a slight grade. Even 1 or 2 inches fall to the 100 feet will give very satisfactory results."

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Costly Slumps In Milk Flow Halted By Sudan Grass

Slumps in milk flow during July and August, which annually cost Illinois dairymen thousands of dollars, could be avoided on many farms by seeding a small acreage to Sudan grass for late summer pasture, according to C. S. Rhode, dairy extension specialist of the College of Agriculture, University of Illinois.

Dairymen who have used the crop for several years find it a highly valuable eed during the late, hot summer. A McLean county farmer who has pastured the crop or the last four years says he likes it fine and is able to turn his cows on it rom four to six weeks after seeding. He uses it to supplement his permanent pasture nd usually lets the cows run on it two to three hours a day. The crop makes lots f feed and only a small acreage is needed.

It is resistant to drouth and heat and makes a good pasture in late summer. t makes the most feed during July, August and September when the average pasture is t its worst. It is a warm weather plant and should not be seeded until the ground s thoroughly warm, usually from May 15 to July 1.

The seed is broadcast on a well prepared seed bed and disced in. It may lso be seeded with a drill. The usual rate of seeding is from 10 to 30 pounds of eed to the acre. Ten to 15 pounds an acre will be enough when it is sown with a rill.

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New Method May Control Serious Rust Of Blackberries

A new method being developed by the experiment station of the College of Agriculture, University of Illinois offers promise as a successful control for orange rust of blackberries, which is widespread on wild blackberry species and annually is getting worse in commercial plantations, according to Dr. A. S. Colby, chief in small fruit culture.

In the new method a commercial chemical is applied to the surface of the stubs remaining after the diseased canes are cut off early in the spring. Other canes arising from the same root stock, which also is infected with the fungus, are more easily reached and killed by this method than by attempting to remove all the extensive root system by the old method of digging, according to Dr. Colby.

No spray program will control orange rust, Dr. Colby said. Unless the commercial chemical is used on the cane stubs, the only other effective method of combating the disease is to dig up the plants early in the spring and destroy them. Since wild brambles are especially subject to orange rust, all diseased plants in the neighborhood of the patch should be destroyed, roots and all, it was recommended.

Orange rust of blackberries has been known in Illinois since 1850 and once a plant becomes infected it never recovers, Dr. Colby said. The leaves usually are so heavily infected that they are of little use and consequently diseased plants do not mature a crop. The disease is commonly spread during May by spores which are carried some distance by the wind. While the disease affects blackberries and dewberries primarily, it sometimes appears on black raspberries. It has attracted wide attention, especially from amateur berry growers, because of the striking orange color of the affected leaves.

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Abandoned Land Growing $600-An-Acre Crop Of Pin Oak

Once cleared for cultivation but later abandoned because it could not be drained, a strip of cheap bottomland in Jackson county is now growing a volunteer crop of pin oak trees which will be worth as much as $600 to $800 an acre, according to L. E. Sawyer, extension forester of the College of Agriculture, University of Illinois.

It is estimated that in Jackson county alone there are 120,000 acres of such land, most of which is valued at not more than $10 an acre, Sawyer reported. Many farmers in that part of the state have on their farms unproductive area of wet land that could grow timber at a profit, he said.

The pin oak can be cut and sold for piling when the trees get to be 14 to 22 inches in diameter, Sawyer explained. Measurements which he made on the rate of growth of young trees on abandoned fields west of the Big Muddy river in Jackson county showed a fast growth. The trees are increasing in diameter at the rate of an inch in two or three years, he reported.

"If protected from fire and livestock, this young stand of pin oak, on a 40-year rotation, will produce a crop of piling which at present prices will bring as much as $600 to $800 an acre. This is a much larger return than could be expected from crops requiring cultivation on land of this kind."

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Three Communities Accept Champaign Players' Challenge

Having won out over 35 other competitors, four rural community clubs will participate May 23 in the first state tournament of one-act plays ever held in Illinois, according to an announcement by D. E. Lindstrom, assistant in rural sociology at the College of Agriculture, University of Illinois. The tournament is being held at Urbana as a result of a challenge issued to the three other entries by the Champaign county group.

A group of players from the Savoy community will carry Champaign county's challenge. Competing against it will be players from Lilylake in Kane county, the Allen community in La Salle county and some Kankakee county community which is yet to be decided. A round of one-act plays which 39 different rural communities of the state staged during the past winter with Lindstrom's assistance and supervision will be culminated by the state tournament.

The Savoy group, winner over nine others in the Champaign county preliminaries, will make its challenge with the presentation of, "The Mayor and the Manicurist", by George Ade. The Lilylake players, who won out over groups from 11 other communities in a tournament staged by the Sycamore Community club of DeKalb county, will present, "Help Yourself", by Walter DeLeon. Players from the Allen Community club in La Salle county will make their bid for state honors with the presentation of "The Neighbors", by Zona Gale. This club was the first-place winner in a preliminary tournament with seven other clubs. The honor of representing Kankakee county in the state tournament is being sought by nine different communities, but the finals will not be held until shortly before the date of the state meet.

The state tournament will be held the evening of May 23 in the new theater in Lincoln Memorial hall on the university campus.

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Schedule June Meetings on Twelve Soil Experiment Fields

A series of field meetings, featuring striking results from the treatment of wheat land with different fertilizers, will be held during June on 12 of the soil experiment fields which the College of Agriculture, University of Illinois maintains over the state, according to an announcement by Dr. F. C. Bauer, chief of the fields.

The schedule is: Enfield, White county, June 3; Ewing, Franklin county, June 4; Sparta, Randolph county, June 5; Lebanon, St. Clair county, June 6; Oblong, Crawford county, June 17; Newton, Jasper county, June 18; Toledo, Cumberland county, June 19; Carlinville, Macoupin county, June 20; Clayton, Adams county, June 24; Carthage, Hancock county, June 25; Dixon, Lee county, June 26, and Antioch, Lake county, June 27.

The wheat, together with other crops growing on the fields, will supply one or more points of interest that will be of value to all farmers attending the meetings, Dr. Bauer said. Various types of clovers for use as hay, forage and soil improvement are growing under different systems of soil treatment. Oats will be a point of attraction on a number of the fields. Experimental plantings of corn will be explained and various kinds of crop rotations shown to farmers attending the meetings.

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Illinois Grows But One-Fourth Of Potatoes She Uses

Illinois uses about four times as many potatoes as she grows, according to a new bulletin, "Growing Potatoes in Illinois", just issued by the experiment station of the College of Agriculture, University of Illinois. Recommended practices which if adopted would increase the yields of potatoes in the state and make them a more profitable crop are set forth in the new publication. It was written by J. J. Pieper, assistant chief in crop production; W. L. Burlison, chief in crop production, and W. P. Flint, chief entomologist of the Illinois State Natural History Survey.

Drouth is the greatest natural hazard among the many problems which have confronted potato growers during the past decade, according to the authors. The most serious handicaps.that can be controlled are insect pests and potato diseases.

"Bordeaux mixture added either as a dust or a spray to arsenate of lead will increase yields an average of about one-third. When insects and diseases are very abundant, yields may be increased 50 to 100 per cent by such a spray.

"Northern-grown seed potatoes are decidedly superior to home-grown. As an average of 50 trials extending over 12 years, northern-grown seed yielded almost 12 per cent more than home-grown seed.

"Cobbler and Early Ohio varieties are recommended as the most satisfactory early potatoes. Carman No. 3 is an outstanding late variety.

"Potatoes are tolerant of acid soils. Where legumes will grow satisfactorily without limestone, it is not necessary to lime the land for potatoes.

"Barnyard manure gave the most consistent and largest increases of any fertilizer. Where heavy manuring is impracticable, it is recommended that the field be tested to determine its need for phosphorus. If it is needed it should be applied in the form that will give the largest net return.

"Most soils of the state have enough potassium for field crops. This element is likely to be lacking only on sandy, peaty and clay soils low in active organic matter.

"Use of commercial fertilizers in potato growing is to be considered only where it is clear that profitable increases in yield can not be obtained in more economical ways."

The new bulletin, which is No. 344, may be obtained upon request.

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Many Dairymen Blind To Added Profits In Cheaper Rations

One live money-making tip that many Illinois dairy herd owners are overlooking is the matter of lowering the cost of the rations which they are feeding, according to C. S. Rhode, dairy extension specialist of the College of Agriculture, University of Illinois. Often it is possible to change from a good ration to one that is just as good but which may be fed at a lower cost, he said.

This can be backed with the experience of successful farmers, he said. In Jackson county a farmer recently reported that he was able to save 34 cents on every 100 pounds of grain and still get just as much milk by changing to a cheaper combination. A Macon county farmer reported a saving of $40 a month in his cost of grain and still held up his production.

"On the average, farmers who feed good rations at the lowest cost are those who use farm grains with the addition of enough high protein supplement to make a balanced mixture. Cottonseed meal, soybeans, soybean meal, linseed oil meal and gluten feed are supplements which usually furnish the cheaper sources of protein."

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1,933 Farmers May Net As Much As $2,000 For Facing Facts

Within the next three months, 1,933 account-keeping farmers of Illinois will face the facts about their business with the result that their annual profits in some cases eventually will be boosted as much as $2,000 a year, according to R. R. Hudelson, extension specialist in farm organization and management at the College of Agriculture, University of Illinois.

The 1,933 farmers are those who completed their 1929 accounts in the standard farm accounting service offered by the agricultural college. Their books have now been analyzed at the college and returned with a statement of the year's business. During the three months of May, June and July each of the 1,933 farmers will be visited by a representative of the college farm organization and management department. At that time each of the farmers will get a more complete analysis of his 1929 business together with a report covering all of the farms in his county which were enrolled in the accounting service for 1929.

"The farmer and the accounting service man put their heads together on the significant phases of the report", Hudelson explained. "They discuss such questions as: How are the figures in the report derived? What do they indicate as to the efficiency and problems of the particular farm? How have other farmers solved similar problems and how did that affect their net incomes? What caused earnings to be higher or lower than for preceding years? Judging by the experience of the hundreds of farmers enrolled in the accounting service what changes in organization or operation give the most promise of increasing earnings on the particular farm?

"It is a common rule for the farmers to face these and other facts frankly and earnestly. In a large majority of cases this leads to improved incomes. In many individual cases the improvement has ranged from $600 to $2,000 a year after allowance has been made for changing weather and price conditions.

"Earnings of farmers enrolled in the work average well above those of the rank and file of farmers in the state. This probably is partly because the men are better business men to start with and partly because of the tips they get from a study of their accounts."

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Farmers Plan Boost Of 25 Per Cent In 1930 Soy Acreage

Encouraged by high yields during the past two seasons and very favorable prices in 1929, Illinois soybean growers have intentions of boosting the acreage of this crop 25 to 30 per cent during the present season, according to R. C. Ross, of the farm organization and management department, College of Agriculture, University of Illinois.

"Records on nearly 4,000 acres in central Illinois in 1928 and 1929 showed average yields of approximately 23 bushels an acre. Average yields on farms keeping records for the seven-year period 1921-1927 were 15.7 bushels an acre with only one year, 1925, showing a yield as high as 20 bushels. Much of the added yields was due to favorable seasons.

"The most common price received for mill beans by growers in 1928 was $1.20 a bushel. In 1929 this price was bid up so that the most common price was $1.44 a bushel. The anticipated demand for soybean oil in 1929 due to a shortage of linseed oil was an important factor in the price of milling beans last year. This demand is likely to be less this year if the intentions of growers to increase the flax acreage 27 per cent in this country is realized."

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Dollar For Lime Adds Ten Bushels An Acre of Corn

For every dollar that he has spent on limestone to sweeten his soils, Clifton Davis, a Morgan county farmer, already has got back 10 bushels more corn an acre and there are still other benefits to come in the form of more efficient yields during the next seven to twelve years, according to a report by C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois. One hundred sixty acres of the Davis farm already has been limed and he says that he will spread one or two carloads a year until the entire farm is covered.

Two corn crops grown on a field that was treated with limestone and sweet clover yielded a total of 60 bushels an acre more than they would have if untreated. The three-ton-an-acre application of limestone cost about $6 and will last 10 to 15 years. Every ton of limestone has returned a total of 20 bushels of corn.

Davis, who is a cooperator in the college's statewide limestone-legume project, was convinced several years ago that his low yields and clover failures were a sign of something wrong with his soil. Tests revealed that it was acid and in 1926 he spread his first car of limestone. An unlimed strip was left through the center of the field for comparison. Sweet clover was seeded in the spring of 1927. The limestone made the difference between a fine crop on the limed land and no crop on the untreated strip.

In the spring of 1928 the sweet clover was plowed under for corn. Land where the sweet clover was plowed under made 70 bushels to the acre, while the unlimed strip yielded about 35 bushels of common quality corn to the acre. The same field was put back in corn in 1929, the limed land making 55 bushels and the unlimed about 30 bushels to the acre. The 35-bushel increase one year and the extra 25 bushels the next made a total increase of 60 bushels an acre for the limestone and sweet clover.

Not only was the yield boosted to a more efficient basis but also the quality of the corn was improved by the limestone and sweet clover combination. Corn on the limestone and sweet clover land grew faster and at the time the corn was laid by was a foot and a half taller than that on the untreated strip. This faster-growing corn matured earlier and produced good quality, dry, sound corn, while the crop on the untreated land did not mature right and made poor quality grain. Sweet clover made the difference by supplying plenty of nitrogen and active organic matter.

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List Dates For Seven Summer Meetings at U. Of I.

The schedule of summer meetings and conferences at the College of Agriculture, University of Illinois as recently announced includes: Home Advisers' Conference, May 27, 28 and 29; Annual 4-H Club Tour, June 4, 5 and 6; Farm Advisers' Conference, June 11, 12 and 13; Agricultural Open House, June 16, 17, 18 and 19; Future Farmers of America meeting, June 19; State Judging Contest for Vocational Agriculture Students, June 20 and 21, and Smith-Hughes Agricultural Teachers' Conference, June 23, 24 and 25.

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Too Much To Hope New Fruit Insect Put Off Two Years

Hopes of fruit growers that the oriental fruit moth, newest invader of Illinois orchards, will be set back two years by the unusual conditions prevailing this season are a little too strong, S. C. Chandler, assistant entomologist of the Illinois State Natural History Survey, has reported to the College of Agriculture, University of Illinois. The moth has just begun its activities for the season.

"Recent examinations have shown that the number of over-wintering worms, including both those on the ground and tree, has been reduced from 70 to 80 per cent by the severe winter. However, the insect has been found to have five broods in Illinois. When we consider the astonishing speed with which other multi-brooded insects like scale regain lost footholds we are inclined to withhold our cheering for a while.

"Not even the loss of its favorite fruit, the peach, will be as hard on the fruit moth as might at first be supposed. Recent orchards surveys have failed to disclose a peach anywhere. However, it is the habit of the insect to feed as a borer in the tender terminal shoots for the first two broods entirely and for part of the third, fourth and fifth broods. Hence it will really be July before the pest will miss the peaches if the trees continue to grow well. After that time will come the critical period. If trees are cultivated late and tender succulent growth continues throughout the season, some of the fruit moths will be satisfied to stay in the peach orchards without any fruit.

"As quite generally happens, however, twigs begin to harden off when cultivation stops, making it impossible for the little worms to enter. This will be especially true in some orchards this year. Some are badly winter-injured and will not put out the usual amount of tender growth. Other orchards are being seeded to some cover crop much earlier than usual because of a lack of crop. This will result in a slow growth which will harden off early.

"In such cases one of two things will happen. If the orchard is at considerable distance from other kinds of fruit there will be a great mortality of the insects in the late broods and very little carryover for next year. This happens every year in southern Georgia. If apples or pears are planted close to peach orchards moths of the later broods will fly over to these orchards, lay eggs and thus prevent race suicide. It is probable that these other fruits will be worse infested this year than in 1929."

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Bigger Teams Speed Spring Plowing On Illinois Farms

Spring plowing, a big proportion of which was done with horses and mules in Illinois this year, has been speeded up on many farms by using six-horse teams working three in front of the other three instead of the old power-wasting four-abreast hitch, it is reported by E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. Six horses hitched in the three-and-three combination make a plow turn six acres a day more easily than a team of four can cover four acres, he said.

There has been plenty of good weather in which farmers could keep up with their work this spring and all have realized that the so-called "hay burners" used the cheap corn and oats to advantage in economical field work, Robbins said. Even though horses do use hay and pasture when they are idle, these feeds are cheap and considerable of them is produced any way for the good of the land, he pointed out. In a well planned farm program the horses really are kept busy a large proportion of the year.

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Selling "First Love" Starts Club Boy As Dairyman

Getting rid of a little $75 heifer calf which was his "first love" in 4-H dairy calf club work started Thomas Chamberlain, a 17-year-old farm boy of Charleston, as a dairyman who now owns one of the higher producing cows of the state and who, with his father, is carrying on a milk business in the home town, according to a report by E. I. Pilchard, boys' club work specialist at the College of Agriculture, University of Illinois.

The original heifer calf with which Thomas started in 1926 did not come up to his expectations when she came into production. Consequently, she and her calf were sold for $225. An additional $75 was put with this so that better quality stock could be bought. Thomas selected two purebred Jerseys out of high producing dams in the herd of Norton Garth, Trenton, Kentucky. One of these heifers dropped a heifer calf on April 6, 1929, and recently when she completed her first year of production she had produced 451.5 pounds of butterfat, a highly creditable mark. In addition she won $60 in prize money when shown at the Illinois state fair in 1929.

The second heifer, on which Thomas also won prize money at the state fair, dropped a pair of twin bull calves on the way home from Springfield. Like successful dairymen do, Thomas is checking up on her production, but her first year's record is not complete yet.

Thomas, who is still in high school, made a success of 4-H dairy club work from the time he took it up four years ago. At the end of his initial year, he was made state champion in the first-year dairy calf club project and awarded a free trip to the Chicago International Livestock Exposition. The next year he was awarded a trip to the National Dairy Show for being the outstanding dairy calf club member of the state. Last year he was selected state champion in the third-year dairy calf club project and given another free trip to the International. In their milk business, Thomas and his father are supplying milk to Charleston for 10 cents a quart.

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Alfalfa's Benefits Can Be Claimed In Southern Illinois

Despite alfalfa's high yields and known superiority over other hay crops, there is a scant though growing acreage of it raised in southern Illinois, according to D. C. Maxwell, assistant in soil survey mapping at the College of Agriculture, University of Illinois.

Southern Illinois soils will grow high yields of the crop provided they have good surface and underdrainage, are fairly high in organic matter and are sweet, he said. This is the time of the year to get ready for a patch of the crop, he added.

"Soils which are found on the flat to undulating topography in the southern part of the state usually are underlain by a highly impervious subsoil which prevents adequate drainage. Alfalfa can not be grown on such soils with assurance of success. However, on the rolling, well drained soils which usually are underlain by a pervious subsoil alfalfa can be grown if other soil conditions are made right. The wind blown soils known as loess soils, which are found along the larger drainage courses, and the rolling, exceptionally well drained glacial soils known as drift soils are particularly well adapted to alfalfa growing.

"Alfalfa requires a sweet soil. Sour soils, of course, can be sweetened with limestone. Higher yields of alfalfa are obtained if the soil has plenty of organic matter. More of this can be added by putting on animal manure or plowing under green manure, preferably sweet clover."

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Abuse Limits Profit From Valuable Leftover Timber

Valuable as it is, the three million acres of timber which Illinois has left out of its original fifteen million acres of forest is being abused in a way which no farmer would mistreat his corn crop if he expected any return from it, it is pointed out by L. E. Sawyer, extension forester of the College of Agriculture, University of Illinois and the Illinois State Natural History Survey.

The average farm woodlot in the state would yield from $3 to $5 an acre a year if it were protected from fire and livestock and given a little common-sense attention, according to Sawyer. To do this it would have to produce only 300 to 500 board feet of timber a year at the average price of $10 a thousand, he explained.

"Not much of a corn crop would be expected if it was left uncultivated, if the earth was packed dry and hard around the roots and if the base of the stalks was scorched by a good hot fire. Yet this is the way woodlots are being abused on many farms.

"Clean cultivation is good for corn, but a woodlot requires an abundance of undergrowth. If cattle are allowed to graze in a wooded area, they eat off the leaves of the young trees and prevent the underbrush from growing. Their trampling compacts the soil so that the roots of the trees can not get the proper amount of air and moisture.

"Fire running through a woodlot destroys all of the young trees that have not been eaten or trampled by the cattle and burns the bark on a great many of the older trees. Hollows in the butts of trees and bare areas on the trunks where no bark is growing, often for several feet up from the ground, are evidences of this injury.

"Woodlots can be cultivated by keeping out fire and livestock, for the young trees and underbrush in an ungrazed woodlot are equal to cultivation. They shade the ground and preserve the moisture, their roots and the accumulation of dead leaves year after year keep the soil in good physical condition and increase its fertility. Destroying this underbrush and layer of leaves by fire or grazing or both robs the soil of its mulch and makes it dry and hard.

"Fire and grazing are the two worst enemies of wooded land and therefore should be kept out. In addition, deformed, defective and undesirable trees should be cut out. Desirable species should be planted in the open spaces.

"Much of the original timberland of the state that was cleared for farming purposes or through lumbering is far too steep to cultivate at a profit. Erosion is taking place on it at an alarming rate and it had better be turned back to timber. Even where the soil on these steep slopes is held in place by a sod, there is very little grazing possible. Few of these areas are yielding enough to pay the taxes."

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Bidding And Rate Evils Complicate Stock Trucking

Thirty-five per cent more livestock was sent to three Illinois markets by truck in 1929 than in 1928, indicating that the transportation system within 50 and 75 miles of the markets is changing fast, according to R. C. Ashby, livestock marketing specialist of the College of Agriculture, University of Illinois.

Steadily changing trucking rates and desperate competition between truckmen are the two most significant factors in the present situation, he believes.

Both declines and increases in truckage rates on livestock were revealed in comparisons between the 1927 rates and those in effect in December, 1928, a study which is reported in the college's Bulletin 342, Livestock Truckage Rates in Illinois. The declines ranged all the way from 1 per cent to more than 40 per cent and the increases from 2 per cent to more than 40 per cent. However, there were many more decreases than increases.

"In many localities stockmen say that there is really no established rate - that when two or more truck men start bidding on a job no one is sure what the rate will be until the last bid is made. That often means very cheap hauling, temporarily. However, trucks must pay their way if they are to stay in the business. Responsible operators recognize this and are trying to maintain rates that will permit such maintenance of equipment as will insure good and dependable service. Stockmen can not afford to employ any other kind.

"It is possible that the time is approaching when livestock owners will have to help decide, individually and collectively, what sort of truck service they want and what they are willing to pay for that grade of service."

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Build Prosperous Farms By Letting Beef Herd Do Work

Twenty-five years of letting white-faced beef cows and calves convert hay and pasture into cash has made the southern Illinois farms of Joe, Grover and Sid Webb among the most productive in Franklin county, according to a report by E. T. Robbins, livestock extension of the College of Agriculture, University of Illinois.

Each of the three sells from $2,500 to $3,500 worth of fat steer and heifer yearlings each year, most of which is income from the land itself.

Good homes, big barns, big mules, tall corn and short-legged cattle are indications of prosperity on all of the Webb farms, Robbins said. Their success is a good example of what farmers can accomplish by following the recommendations outlined in the college's state-wide extension service project for encouraging livestock in the farm plan.

Within a few years it is possible that beef cows may be bought at moderate prices to start such a beef-making project as the Webb's have been carrying on, Robbins said.

The three brothers own and operate about two sections of typical southern Illinois land. Last year Joe's 36 beef cows raised 34 calves. His brothers, Grover and Sid, live on adjoining farms and they too keep white-faced cows and fatten their calves as yearlings. Each plans to increase his cow herd to about 50 head during the next few years.

They have hauled lots of limestone and they grow sweet clover. While this crop is adding fertility to the soil it also pastures the cows. The cows are wintered on pasture, stalk fields, straw stacks, red top hay and a little silage. The calves are fattened on corn, cottonseed meal and soybean hay.

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Square Meal Makes Bacteria Tireless Builders of Soil

Given a square meal, certain kinds of bacteria are tireless workers in building up the fertility of the soil, according to O. H. Sears, assistant chief in soil biology at the College of Agriculture, University of Illinois. In fact his recommendation to farmers is, "Feed the bacteria and they will feed you". These bacteria, or soil micro-organisms, are largely responsible for the changes which occur in soils whereby plant food materials are liberated for the production of good crops, he explained.

"It is obvious that a clearer understanding of the relation between bacteria and the plant food resources of the soil will aid in improving the fertility of farm lands.

"Like all other living things, soil bacteria need suitable food for their growth and activity. Some are able to use food from many different sources while others prefer a selected diet. For best results, therefore, it is necessary to supply food for those organisms whose activities are expected to be beneficial and withhold food from those which will have an unfavorable influence. At the same time, it should be remembered that a given kind of organism may be helpful in one situation and harmful in another.

"The use of straw illustrates this point. An application of straw encourages development of micro-organisms which feed upon the nitrate supply of the soil. Hence if straw is plowed under immediately before a corn crop on ordinary soil, it will cause the bacteria to compete with the corn crop for nitrates and consequently yields will be lowered, However, if straw is plowed under in the fall of the year, the straw may favor the utilitation of nitrates by bacteria and thus protect the available soil nitrogen against leaching and ultimate loss."

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Proven Methods Bring $606 Quick Cash From 55 Lambs

Quick cash in the form of $606.60 for 55 lambs has convinced Ivan Snow, a Woodford county farmer, that it pays to push lambs along for an early market, according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. Even with the price far below other years, Snow said that he was going to try the same plan again next year.

He is a cooperator in the college's project on early lamb production, designed to improve the quality and price of Illinois lambs. When he sold his crop in April, 15 of the lambs averaged 52 pounds at 17 cents a pound at home and 40 averaged 79 pounds at 15 cents a pound in Chicago. The light lambs netted $8.84 a head, while the heavier ones had a gross value of $11.85 each. Snow figures that he got as much as he would for these or later lambs next fall.

Chief advantages of the plan are that the lambs escape stomach worms, there are seldom any losses from dogs, the lambs can be sold before hot weather slows up their growth, cash is secured quickly and the animals usually bring more dollars a head than those which are kept until the next fall or winter.

After last year's lambs had been weaned in June, Snow's ewes and ram were left on sweet clover pasture and bred promptly. The ewes were Rambouillets and the ram a Hampshire. The lambs were dropped between December 15 and January 20. From the time they would eat anything they had alfalfa hay and all of the grain they wanted. The grain mixture was principally shelled corn and oats fed in a trough in a pen. The pen was equipped with a "creep" entrance so that the ewes could not get in and bother the lambs.

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Alfalfa Growers Are Cheered By News Of Wilt Control

Cheering reports that a fairly satisfactory control method is in sight for alfalfa wilt, which annually is wiping out more fields of this crop in Illinois, are being sent to alfalfa growers by Dr. Benjamin Koehler, crop pathologist of the College of Agriculture, University of Illinois.

Government investigators in cooperation with the experiment station pathologists of some of the states in the alfalfa seed producing region have made some selections from a Turkenstan strain of alfalfa which are highly resistant to the disease, he reported. Apparently the resistant strains also are winter hardy, it was added.

"Until seed from these resistant selections is available there are four things that growers can do to help keep the disease in check. A field should not be replanted to alfalfa after there has been wilt there. Alfalfa should not be cut while the plants are wet with dew or rain. Newly planted alfalfa fields should be located so that the drainage water from an old alfalfa field can not run over them. When a new and an old field are ready for cutting about the same time, the new should be cut first. In this way the mower is not likely to carry the disease to the new field. The disease is spread rapidly by drainage water and mowing machines.

"The disease is carried in the soil and after it has once appeared in a field, the use of a resistant variety on such land seems to be the only satisfactory control. However, it will be at least four or five years before seed of the resistant selections can be produced in large enough quantities to be available commercially. It should be warned that there are considerable differences between some of the different Turkenstan importations and therefore not everything that is offered as Turkestan seed should be accepted as being wilt resistant nor as being desirable.

"There has been an unusual number of reports of alfalfa fields being wiped out by the wilt this spring. In one of the dairy sections, about half the alfalfa fields visited were in a state of rapid decline from the effects of the wilt. This serious disease has been introduced into the state rather recently. It was first discovered in Illinois in 1924 near Freeport, but circumstantial evidence indicates that it probably existed in the state as much as ten years before that time.

"Under Illinois conditions, once the disease becomes established in a field, the stand usually is ruined by the time another year has passed. Under western dry land conditions, however, the disease may linger for a number of years before it does much damage. There is no question that the disease is becoming more widespread in Illinois every year."

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Printed in furtherance of the Agricultural Extension Act approved by Congress May 8, 1914. H. W. MUMFORD, *Director*.

Giving Up Horses Costs Farmers 400 Million On Grain

Farmers of the United States would be getting almost 400 million dollars a year more for their corn and oats crops than they are now getting if they were using horses and mules as much as they were ten years ago, according to figures worked out by E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois.

"Ten years ago farmers of the United States kept nearly 6½ million more horses and mules than they do today. If these were here now they would eat an average of 25 bushels of corn and 45 bushels of oats annually. This would take up 6 per cent of the nation's 1929 corn crop of 2,622,189,000 bushels and 23 per cent of the oats crop of 1,238,654,000 bushels.

"Economists figure that the price of grain usually is increased about 1½ per cent for each 1 per cent decrease in the crop. Such an added consumption of grain crops and a consequent decrease in the total marketings would mean a probable increase of about 9 per cent in the price of corn and 35 per cent in the price of oats. In other words, if United States farmers were operating as largely with horses and mules as they did ten years ago, they would be adding about 7 cents a bushel to the present price of corn and 15 cents a bushel to the price of oats.

"Applying these figures to the average annual production would mean $192,271,800 more for the nation's corn crop and $201,762,150 more for the oats crop, a grand total of $394,033,950 - almost 400 million - for the two crops.

"Adding the increases to the average April farm prices of 78 cents for corn and 42 cents for oats as reported by the federal department of agriculture would give a price of 85 cents for corn and 57 cents a bushel for oats. This oats price would be two-third of the corn price, the same as before the war, instead of practically half the price of corn as at present.

"This is why Illinois farmers often point out that those who continue to use horses and mules for field power are patronizing their own industry and helping boost the market prices of corn, oats, hay and of horses and mules. On these farms the effort at farm relief begins at home. 'Anyway', as one farmer put it, 'who should be expected to patronize the farm industry if farmers do not'?".

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Growers Can Halt Bean Leaf Beetle By Dust Or Spray

The Mexican bean beetle, a threatening menace to the bean crop of Illinois, has not yet been found in the state, but the bean leaf beetle, another pest, is making inroads into truck and garden patches of green beans in the southern end of the state. This is the report to the College of Agriculture, University of Illinois by S. C. Chandler, assistant entomologist of the Illinois State Natural History Survey.

The best method of stamping out the bean leaf beetle is by dusting with calcium arsenate, Chandler recommended. Since bean foliage is subject to arsenical injury, the calcium arsenate should be diluted 9 parts of hydrated lime or by 1 part of sulphur and 4 parts of lime, he pointed out. If the grower is not fitted for dusting but can spray he can use 1½ pounds of calcium arsenate and 3 pounds of hydrated lime in 100 gallons of water.

The mexican bean beetle is now present in neighboring states and a lookout is being kept for this destructive pest in Illinois. Growers are asked to report any new enemies of beans and to send specimens to the state entomologist building at the University of Illinois.

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Corn Husking Champs Have Rival In Mechanical Pickers

Another of the few remaining heroes of American rural life, the champion corn husker, may be nothing more than a myth to generations of the future, judging from figures on corn husking costs just announced by the College of Agriculture, University of Illinois.

It cost 10.4 cents a bushel to husk and crib corn by hand, whereas the cost with one-row mechanical pickers in 1928 and 1929 was 8.3 cents a bushel and only 6.6 cents a bushel with two-row pickers. The hand husking costs were calculated on the basis of detailed cost records which the farm organization and management department collected on 12,000 acres of hand-husked corn. Costs on one-row pickers were secured from 102 farms and on two-row pickers from 64 farms.

At average rates paid hand huskers, the cost of harvesting Illinois' annual crop of about 8,000,000 acres of corn is around $20,000,000, according to P. E. Johnston, of the farm management department. With wages now high as compared to the price of corn, many farmers have turned to mechanical pickers as a possible means of reducing their harvesting costs, he said.

Fortunately for those boys who aspire to be champion corn huskers, not all Illinois farms are organized to use a mechanical picker to advantage, Johnston explained. Many farms are too small, many farmers have family labor available for hand husking and on other farms the cash outlay for a tractor and picker would be excessive.

All the figures on cost of husking were secured from farms in east central Illinois. The figures for the mechanical pickers are based upon records kept by the farmers and include their estimates as to the life of the machines. All were new implements and all were of the power take-off type, so that depreciation was hard to estimate. The figures on mechanical pickers did not include the cost of picking up the corn left in the field or the loss where the corn was not saved. The cooperating farmers estimated that the two-row pickers left much more corn in the field than did the one-row implements. This loss of corn would be serious on farms where there was no livestock to clean it up. Savings made through the use of mechanical pickers would be offset by the loss of grain if one- and two-row pickers left as much as one and a half and three bushels, respectively, more corn in the field than hand husking.

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Printed in furtherance of the Agricultural Extension Act approved by Congress May 8, 1914. H. W. Mumford, *Director.*

New Method Useful In Treating Milk Anemia Of Pigs

Costly mortality tolls which milk anemia takes in suckling pigs, can now be prevented by means of an effective method worked out by the nutrition and swine divisions of the College of Agriculture, University of Illinois, it has been announced.

The disease, which is a nutritional disorder, has been checked by brushing the udder of the sow two or three times daily with a dilute solution of iron and copper salts thickened with corn syrup. The effectiveness of iron and copper in the cure of nutritional anemia was first demonstrated at the University of Wisconsin College of Agriculture. The Illinois method of administering the materials was worked out by T. S. Hamilton, associate in animal nutrition, and G. E. Hunt, assistant in swine husbandry.

Milk anemia has blocked the efforts of swine producers to take advantage of the more profitable early pork markets and at the same time use their labor to better advantage during the slack months of the year. To accomplish these ends they have had to breed their stock for unnaturally early farrowing. Litters are farrowed in barns and are kept indoors for unduly long periods because of the unfavorable weather.

During this long confinement when the little pigs are restricted entirely to the sow's milk for the first three or four weeks of life, an anemic condition of the blood develops rapidly. At birth the blood of the pig contains 10 to 11 grams of hemoglobin in each 100 cubic centimeters, but immediately thereafter this concentration is thinned out until at 10 to 14 days of age it may be much less than half the birth amount. If the little pig is then put outside where it has access to dirt, sunlight and vegetation rapid development of the anemic condition is arrested and the hemoglobin quickly returns to normal. However, if weather conditions prevent removal from the barn, the impoverishment of the blood continues until the level of hemoglobin at four weeks of age may be as low as two grams or even less in each 100 cubic centimenters of blood. This amounts to a severe anemia and is associated with impaired appetite, stunted growth, a paleness of the skin and mucous membranes, a swollen condition of the head, neck and shoulders and thumps. If the deficiency in the diet is not corrected the mortality is high.

A drop in hemoglobin will still occur during the first week of life, even when the new method of prevention is used, but an anemic level is never reached.

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Tenant Farmer Buys Own Limestone To Convince Landlord

Tired of clover failures year after year, George Plackett, a Ford county enant farmer bought two tons of limestone himself and thereby succeeded in convincing is landlord that sweetening the acid soil on the farm would pay both of them. lackett is one of the many cooperators in the limestone-legume project which the xtension service of the College of Agriculture, University of Illinois is pushing hroughout the state. The demonstration which he staged was so convincing that the andlord this year ordered two carloads of limestone for the farm, according to a eport by C. M. Linsley, soils extension specialist of the college. Plackett spread is two tons of lime on a single acre in a 40-acre field that was to go to oats with seeding of red clover. Clover on the limed acre was cut separately and made three oads to the acre. The rest of the field averaged two tons to the acre. The diference was so striking that the landlord ordered the two carloads of limestone ithout asking for further proof.

-M-

Modern Farmstead Must Reckon With Speeding Traffic

Speeding auto traffic along country highways is only one of the modern-day factors with which farmers must reckon in reorganizing old farmsteads, it is pointed out by W. A. Foster, of the farm mechanics department, College of Agriculture, University of Illinois.

"Pioneer farmsteads were laid out long before men dreamed of labor saving machinery, increased production and efficiency. In those old days it was not uncommon for a barn or crib to be built across the highway from other buildings. Too often under the stress of excitement or the necessity of having the building replaced quickly it is rebuilt on the old site without regard to modern needs, efficiency and appearance. Aside from everything else, there is a real hazard in dodging speeding auto traffic with two full milk pails in hands or a bushel of corn on one's shoulder.

"Since pioneer farmsteads are not fitted to modern agriculture, farm owners should analyze their problems, make a definite plan and work toward that plan as their objective when they remodel or replace their buildings. Many good buildings are poorly placed. It would be desirable to have them correctly located for efficiency, safety and convenience, but they can not be moved because of cost or construction conditions.

"Modern needs require convenience, sanitation, quiet, shelter from or exposure to wind and sun, safety and orderliness and beauty.

"The buildings should be located about a well drained open court or farm yard and they should be properly grouped, as crib, hog house and feed floor. This court should be open so that sunlight will enter in winter and refreshing breezes in summer. The feed lots should be located so that summer breezes do not carry odors to the house. The fire hazard can be kept down by avoiding putting the buildings too close together. Smaller buildings should be 40 to 60 feet apart, while the barn should be from 140 to 160 feet from the house. The machine shed should shelter the farm yard from the cold northwest winds. The garage and poultry house belong to the group nearest the residence."

-M-

Find Pencil Outdoes Pitchfork In Piling Up Profits

That the pencil is mightier than the pitchfork when it comes to piling up profits from beef cattle feeding has been brought home to 757 farmers in 19 counties of the state during recent months, according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois.

The 757 farmers were those who attended beef cattle feeding schools held in the 19 counties by the extension service of the agricultural college. With pencil and paper they were shown how to figure out for themselves the kinds and amounts of food most needed by their cattle to pay a profit.

Figuring done by the men emphasized the importance and value of clover and other legume hay. At each school the men were shown the financial advantage of balancing the ration with moderate amounts of suitable feeds supplying protein at a low cost a pound. They also were shown how to figure the amount of any supplementary feed that probably would prove most profitable to use.

The 19 counties in which schools were held were Lake, Kane, Coles, Lee, Henry, McDonough, Pike, Macoupin, Knox, Vermilion, DeKalb, LaSalle, Sangamon, Woodford, McLean, Cass, Warren, Winnebago and Stephenson.

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Illinois Farmers Reap Millions In New Liming Record

A new record of almost a million tons of limestone which Illinois farmers spread in 1929 to sweeten acid soils was enough to swell their crop returns by as much as 13 to 19 million dollars under the normal rate of expectancy, according to figures announced by C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois.

Use of limestone and legumes for efficient crop production is one of the oldest teachings of the college. Last year farmers of the state spread a total of 950,000 tons in putting the plan into practice. This was an increase of 200,000 tons over the previous year and one of the biggest increases that has been made in the use of limestone in recent seasons. The figures include only the limestone sold in the state by commercial quarries. In addition a sizeable tonnage was put out by small local quarries.

Limestone, which costs around $2 a ton, can be expected to pay at the rate of $14 to $20 a ton in the form of bigger and more efficient crop yields, according to results which the experiment station of the college has secured on its soil experiment fields scattered over the state.

"Increased use of limestone during the past year shows that, in spite of hard times on the farm, farmers are scraping together the necessary funds for buying limestone," Linsley pointed out. "They realize that during a period of low prices it is more important than ever to produce high and economical yields if taxes, interest, labor and other expenses are to be met. They also realize that clovers are the cheapest means of improving their crop yields and that limestone must be applied to sour land before clovers can be grown. In many cases it is a question of liming the land and increasing yields or quitting the farm.

"Bankers would rather loan money to a farmer for limestone than for any other purpose because they know that limestone is a safe and profitable investment for sour land.

"Railroads, too, are behind the movement. One railroad last year delivered 76,000 tons, or 1,523 carloads, of limestone to Illinois farmers. This was an increase of 142 carloads over the previous year. Limestone trains which give the farmer the privilege of having his carload of limestone dumped on the right of way at a point nearest his farm have done much to encourage the use of limestone."

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Printed in furtherance of the Agricultural Extension Act approved by Congress May 8, 1914. H. W. Mumford, *Director*.

Machine Pickers Halve Time Needed For Corn Husking

Time required for husking an acre of corn, one of the big jobs on Illinois farms, can be halved through the use of one- and two-row mechanical corn pickers, according to results of studies on corn husking costs just announced by the Farm organization and management department of the College of Agriculture, University of Illinois.

Hand husking was found to take 5.1 hours of man labor an acre as compared to 2.7 hours an acre for one-row pickers and 2.2 hours for two-row pickers. These and other figures collected in the study can be used by farmers as a guide in deciding which method will be most economical under their particular conditions, it was pointed out by P. E. Johnston, of the department.

In addition to the man labor, hand husking took 10 hours of horse labor and 5 hours of wagon use an acre. One-row pickers used 3.3 hours of horse labor, 1.2 hours of tractor and picker use and 2.9 hours of wagon use an acre, in addition to the 2.7 hours of man labor. Two-row pickers took 2.9 hours of horse labor, eight-tenths of an hour of tractor and picker use and 2 hours of wagon use an acre, in addition to the 2.2 hours of man labor.

Offsetting some of the saving in labor was the added machinery cost of the pickers. One-row pickers cost 72 cents an acre and the two-row pickers 60 cents an acre for repairs, depreciation, interest on investment and shelter when depreciation was calculated on the acre basis. Depreciation was figured on the basis that the total amount of corn that would be husked during the life of the pickers was 950 acres in the case of the one-row machines and 1,400 acres in the case of the two-row implements.

One important point in favor of the mechanical pickers is that when corn is husked by hand the temporary labor hired for the job must be cared for in the home, Johnston pointed out. In many years the corn husking season extends from the middle of October until the end of the year.

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Early Lambs Marketed For Twice As Much As Late Ones

Illinois sheep flock owners who have turned to the raising of early lambs sold their best early lambs during the past spring at twice the price of top lambs held over from last year, according to a report by E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. Early lamb raisers cashed in their 1930 crop at three to four months of age at very good figures, in spite of the over supply of big late lambs from 1929, he said. The added profits are another argument in favor of the plan of giving lambs an early start, a quick finish and a prompt sale, he pointed out.

Encouraged by the better profits and other advantages, flock owners in the state are making early lamb raising more common. They realize, Robbins explained, that lambs born in January and February and fed grain from the start may be sold at high prices in April and May, usually bringing more dollars a lamb than they ever would bring if kept until the next fall or winter. The early lambs have no losses from parasites, little risk from dogs, no setbacks from hot weather and no delay in returning the cash. In short, he said, they pay.

However, early lambs must be good to bring top prices. Good breeding and generous feeding are amply rewarded. In four Illinois counties this year, the farm advisers, in cooperation with the extension service of the agricultural college, are putting on campaigns to register improvement in quality of lambs. These counties are Adams, Clark, Marion and Wayne.

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Piatt Farmer Outdoes Hog Raisers With Simple Feeding Plan

Farmers who want to cash in on their March pigs by feeding them for big weights in a short time should take a tip from M. E. Wise, a Piatt county farmer, according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois.

Last fall Wise sold his 47 March pigs at an average weight of 240 pounds each. Few men succeed in pushing a drove of spring pigs for such a heavy weight in an average of less than six months, according to Robbins. The secret of his success was using the McLean county swine sanitation system and balancing his corn with suitable feeds supplying protein at a low cost a pound. Both of these practices are being pushed by the college extension service, in cooperation with county farm advisers and farm bureaus, in the interests of economical and profitable prok making on Illinois farms.

Wise raised his pigs on a mixed clover and timothy pasture where no hogs had been the year before. They were started on tankage and linseed oil meal, in the proportion of two to one, while they were still sucking the sows and had all they wanted of that mixture and of corn. They ate 2,000 pounds of tankage, 1,000 pounds of linseed oil meal and 600 bushels of corn.

At this rate each bushel of corn and the five pounds of protein supplement fed with it produced more than 18 pounds of pork. Each 324 pounds of feed made 100 pounds of pork. This is a showing of which any hog raiser might well be proud, according to Robbins.

Wise began using the sanitation plan of raising hogs several years ago when he was president of the Piatt County Farm Bureau and has since urged his neighbors to take up the idea. This plan has kept his herds free from runts. The pigs all thrive from the start.

The mixture of tankage and linseed oil meal which he fed in the proportion of two to one contains 51 per cent protein. With tankage at $75 a ton and linseed oil meal at $60, the mixture supplies protein at a cost of a trifle less than seven cents a pound. It is easy to figure the cost of a pound of protein, Robbins explained. Divide the price of 100 pounds of any feed by the percentage of protein as marked on the sack and the result is the price of each pound of protein which it contains, he explained.

-M-

Bigger Crop Starts Macon Farmer Using Car Of Lime A Year

Having seen limestone and sweet clover add 25 bushels an acre to his corn crop in a single year, C. E. Rogers, a Macon county farmer, is planning to buy and spread a carload of limestone a year until all the acid land on his farm has been treated, according to a report by C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois. Rogers is enrolled in the college's limestone and legume project and as such is one of the thousands of farmers in the state who are using this combination to put their farms on a paying basis.

Rogers put his first carload of limestone on 20 acres in 1926. He seeded sweet clover in the wheat that fall and left it stand over for a sweet clover seed crop in 1927. The sweet clover then was plowed under in the fall of 1927 and the field planted to corn in 1928. The crop made 65 bushels to the acre. Without the treatment the field probably would have made 40 bushels to the acre, Rogers estimated. Last year this same field was planted to corn and made 50 bushels to the acre. It was estimated that the yield would have been 15 bushels less than this, or about 35 bushels an acre, without limestone and sweet clover.

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Some Illinois Soils Net Four Times The Crop Others Do

Even with all their famed fertility and the best possible individual treatment that can be given them Illinois soils vary so widely that some of them are worth almost four times as much as others as crop yielders. This is revealed in a summary which the College of Agriculture, University of Illinois has just issued on crop yields harvested on 30 soil experiment fields during the rotation period ending in 1929. The summary takes the form of Experiment Station Bulletin 347, "Crops Yields From Illinois Experiment Fields in 1929".

Under the most effective system of treatment, soil on the Aledo experiment field yielded crops having an average annual acre value of $43.30 during the rotation period ending in 1929. In contrast, soil on the Odin field yielded crops having an average annual acre value of $12.33. This was a difference of 250 per cent, it is pointed out by F. C. Bauer, chief of the fields and author of the bulletin.

Even wider variations were shown by the soils on the different fields in point of net increases from the most effective systems of treatment tried out on them. At Ewing the most effective system of treatment produced crop increases having a net annual acre value of $19.06, while the most effective system tried out on the McNabb field yielded crop increases having a net annual acre value only of 56 cents. This was a difference of 3,300 per cent.

In order to test the effectiveness of different systems of soil treatment on the yield of farm crops, the experiment station has for many years conducted field investigations in all sections of the state on extensive soil types varying widely in productiveness. Some investigations of this kind have been under way since 1876. The first of the outlying fields were established 1901. During the 1930 crop season, 30 of these fields were in operation and it is the results from them which are reported in the new bulletin.

In general the less productive soils made the greatest net response to soil treatment, and the more productive soils the least. Some of the more productive soils gave little or no net response for any system of soil treatment tried. On a large number of fields the livestock system of farming gave a larger net response than the grain system. On some fields the simplest systems were the most effective, while on others the complicated systems gave the best results. The results again emphasize the fact, according to Bauer, that no one system of soil improvement will give the best results on all soils. A study of the results from the fields, by rotation periods, reveals further that the most effective system for any particular field changes from time to time, tending to go from the simpler to the more complex. A clear lesson from the data is that farmers must be constantly alert if they are to make the most economic use of their soils.

Farmers and other interested persons may secure free copies of the new bulletin by writing the college at Urbana.

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Growers Warned Fruit Pest Will Appear Earlier This Year

Second-brood codling moth, one of the serious fruit pests in Illinois, will start hatching this season about 12 days earlier than last year and orchardists therefore will have to apply the necessary sprays earlier than they did in 1929 in order to keep down damage by the insect. This is the warning sounded in a joint statement issued by the horticulture department of the College of Agriculture, University of Illinois and the Illinois State Natural History Survey.

Surveys show that the dates about when the codling moth worms will start coming out in the various sections of the state are: Pulaski, Union, Jackson and Johnson county districts, June 27 to July 2; Marion, Richland, Clay, Madison and southern Calhoun county, June 28 to July 3; Macoupin, Effingham, Jasper and Crawford county, July 2 to 3; Jersey, Pike, Adams, Scott, Sangamon, Macon, Douglas, Edgar, Champaign and Vermilion county, June 5 to 8; Hancock, Henderson, Fulton, Peoria, Woodford, Livingston and Iroquois county, July 7 to 10; Rock Island, Henry, Bureau, LaSalle, Kendall and Will county, July 9 to 12; Whiteside, Carroll, Lee, DeKalb and Cook county, July 11 to 15 and northern Illinois, July 15 to 20.

"Sprays to control the first worms of this brood should be on by the above dates. Apparently this second brood will be rather drawn out. Another spray therefore will be essential two weeks after the first one is put on. Another statement will be issued later regarding late second- and third-brood worms. There probably will be a considerable third brood throughout the southern half of the state.

"As the spray residue tolerance has been lowered this year, it is imperative that every care be taken to prevent excess residue on the fruit. Where arsenate of lead is used for the second-brood spray, growers should not use more than 2 pounds of lead to 100 gallons of spray. If the oil sprays are used, they must be applied according to the directions of the manufacturer.

"If the oil sprays are used for the second-brood codling moth, fungicides should not be applied, since they may cause injury. If lead arsenate is used for the second brood, Bordeaux mixture should be applied for the late blotch infection on blotch-susceptible varieties.

"If bitter rot appears in the orchard, Bordeaux mixture should be applied at once. Owing to the dry weather which has prevailed in the early months of the summer, the fingicidal sprays may be omitted during the second-brood codling moth period except in those cases where blotch or bitter rot have been unusually prevalent in past years."

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Plugging Holes Now Will Save Farmers Big Rodent Bills

Farmers can save themselves big fall and winter board bills for rats and mice by taking a little time now to fix up the places where grain, vegetables and fruit will be stored later in the season, it is pointed out by specialists of the College of Agriculture, University of Illinois. Buildings of concrete, brick or similar material may have cracks in the floors and walls providing harbors in which the rats and mice can live and breed, said G. C. Oderkirk, specialist of the federal biological survey, who is cooperating with the college and the Illinois State Natural History Survey in rodent control work in Illinois.

"Large pieces of sheet metal, thrown away at town and city refuse dumps, can often be had without cost, cut in strips and nailed along edges of doors, sills and floors where rats have entrance to rooms in which food is stored.

"Most corn cribs need attention and in many cases the damage by rats can be reduced by repairing the floor, raising it a foot or so above the ground and cleaning out thoroughly beneath it.

"Old lumber, boxes and miscellaneous material carried along from year to year in yards and in buildings should be piled so that there is a foot or more of space beneath it."

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Leaf Spot Disease Of Cherries May Make Pie A Luxury

Cherry pie may become an expensive luxury in Illinois in the near future as a result of the increasing prevalence and destructiveness of a fungous disease known as cherry leaf spot, according to Dr. H. W. Anderson, associate chief of pomological pathology at the College of Agriculture, University of Illinois. It causes a yellowing and dropping of leaves which threatens the life of what has been a highly satisfactory farm orchard fruit, he said.

Although not a new disease, the fungus has become a threat as a result of weather conditions which have favored it during the past three or four seasons according to Dr. Anderson. Most cherry trees have lost their foliage before the ripening of the fruit and have become so weakened by a late secondary growth that they were easily killed by the cold winter weather.

"Fortunately, cherry leaf spot, or 'yellow leaf', is not hard to control. Commercial lime sulphur diluted at the rate of 1 gallon to 50 gallons of water should be used. This should be applied just after the blossoms have dropped, again about ten days later and still a third time about two weeks before the cherries are harvested. A follow-up spray of the same material should be applied as soon after harvest as possible. Lead arsenate at the rate of 1½ pounds to 50 gallons should be used in the first two sprays for the control of curculio.

"The fungus attacks the leaves only. It appears about the middle of May as small purple spots over the surface of the leaf. Later the leaves turn yellow and drop off. Following the loss of foliage the tree renews its growth so that frequently a second crop of blossoms is produced in the fall. This renewed growth is harmful because the wood formed does not mature before the cold weather comes.

"The fungus lives over the winter in the fallen leaves under the tree and in the spring the spores, or seeds, are produced and carried to the developing leaves by wind and rain. Usually these spores mature shortly after bloom. The wet weather which has prevailed at this time during recent years is responsible for the extensive outbreaks of the disease.

"Raking up and burning all the leaves under the trees during the winter aids in control. Cultivation early in the spring will bury some of the old leaves, but even with raking and cultivation there are enough leaves left to furnish spores for infection and hence these methods can not be depended upon."

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Gets 800 Pigs From 104 Gilts To Make Pork Raising Pay

Something of a record in making pork chops can be claimed by Henry Seymour, an Adams county farmer who for six years has cooperated with the extension service of the College of Agriculture, University of Illinois in demonstrating to his neighbors the benefits and merits of the swine sanitation plan which the college is advocating throughout the state.

This year Seymour raised 800 pigs from 104 gilts, according to a report by E. T. Robbins, livestock extension specialist. Last January he turned five young boars with the 104 gilts. All but one of the gilts farrowed during about a month's time, principally in May.

Late in April, before farrowing, the gilts were washed with a spray pump and turned into a clean pasture field with scattered farrowing houses 5 by 6 feet in size. As advocated in the swine sanitation plan, this was done to get away from worms and other parasites and diseases which annually take a heavy toll in the pig crop. Each gilt did her own work, excepting that during the first week after farrowing a little corn, night and morning, was thrown in front of each house to encourage the gilts to stay at home.

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Illinois Farmers Close Second Best Year In Decade

Lean as it was, 1929 was the second best year for farm earnings in Illinois since the depression began in 1920, according to summaries which have just been made of accounts which 1,950 farmers in 90 counties of the state kept in cooperation with their county farm advisers and the College of Agriculture, University of Illinois.

What little improvement 1929 did show over 1928 was brought about by better earnings in the southern half of the state. Average earnings for the northern half were almost exactly the same for the two years.

It was calculated that the average farmer of the state made 3.7 per cent on his capital during 1929. This figure is based on the average of the 1,950 farms after allowance had been made for the usual difference between farmers who are progressive enough to keep accounts and those who comprise the rank and file of farm operators. Even at this rate of earning, 1929 can not be said to have been a very prosperous year for farmers, despite the fact that 1924 was the only year in ten when average farm earnings in the state were better than they were in 1929, it was pointed out by the college farm organization and management department.

Included in the calculated earnings of 3.7 per cent is compensation for the farmer's management and risk, as well as for the use of capital. Even the progressive and business-like farmers who kept accounts in the college's farm accounting service earned only enough in 1929 to pay themselves a wage of $75 a month for their labor and management, after they had been allowed 5 per cent on their capital. It has been shown repeatedly that the earnings of the rank and file are lower than those of the account keepers.

In that part of the state lying north of a line running approximately east and west through Springfield, average farm earnings were remarkably uniform for 1928 and 1929. South of this line, particularly in the southeastern quarter of the state farm earnings were better in 1929 than in 1928.

Earnings in 1929 were lowest for an area about two counties wide including and extending eastward from Christian county. This area suffered especially severe damage from the wet weather in the spring of 1929 which prevented the planting of corn in season and caused poor filling of the small grain crops.

Although average Illinois farm earnings have been relatively stable for two years and there was less than the usual variation from one part of the state to another during 1929, there was the usual wide difference in earnings from farm to farm. Between the one-third highest earning and the one-third lowest earning farms in given areas of the state there were differences of as much as $3,000 a farm in net receipts.

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Pork This Year Leads Meats For Harvest Hand Dinners

With hog prices the lowest they have been since 1924, pork this year has no competitor as the pièce de résistance of the dinners which farm housewives will be preparing for threshers and harvesters during the next few months, according to F. C. Olson, of the meats division, College of Agriculture, University of Illinois.

Housewives who use pork in their menus not only will be taking advantage of lower prices but also will be aiding the hog business of the state, he pointed out.

"Pork, either fresh or cured, lends itself to a variety of uses and is welcome as the main dish of the meal. It comes in the form of roasts, bacon, steaks, chops and sausages. Either baked or boiled ham or picnic makes a good meat dish for threshers. All are easy to prepare. A ham contains 63 per cent of lean meat for muscle building, 24 per cent of fat for energy and 10 per cent of bone. At present prices, the edible meat from a ham would cost approximately 30 cents a pound. The picnic, erroneously called cala ham, comes from the shoulder. It is very satisfactory and much cheaper than ham. A pound of edible meat in a picnic will cost about 24 to 25 cents. Cured meats which are baked or boiled are very good served cold, especially at an evening meal on a hot day.

Fresh roast pork, although thought of as a winter dish, may be used to good advantage in the summer and at present prices is very economical. The shoulder cut is the cheapest and will serve well, costing approximately 25 cents an edible pound. Fresh hams will cost a little more, while the heavier loins should cost only a couple of cents more than shoulders. If they can be bought at that price they are as economical as shoulders.

"For those who like to make sandwiches, some of the surplus pork may be used that way. They may be used for evening meals, picnics or afternoon lunches. The filling for the sandwich may consist of country butter and a liberal slice of baked or boiled ham or roasted pork."

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'Hoppers Threaten Clover Unless Fed Poisoned Bait

Grasshoppers will practically destroy second-crop clover on many Illinois farms this year unless farmers wage war on them during the next few weeks, according to a warning which the College of Agriculture, University of Illinois has from W. P. Flint, chief entomologist of the Illinois State Natural History Survey.

"Within a few weeks after the first-crop clover is cut, young grasshoppers will be abundant in the clover stubble on many farms. If these pests are allowed to go unmolested they will, in scattered sections, practically destroy the second crop.

"A few pounds of poison bran bait scattered in infested fields at this time will kill many of the young grasshoppers and prevent the damage. The best poison bait for grasshoppers is made by mixing together, dry, 25 pounds of bran and 1 pound of paris green. Then 2 quarts of black strap molasses should be mixed in 3 gallons of water and this mixture stirred thoroughly into the bran and paris green. This should make a mixture which will just hold together when squeezed in the hand. The poison bait should be sown at the rate of 8 to 10 pounds an acre, or as thinly as possible over the field. The bait should be sown early in the morning, at sun-up."

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Terraces Permit Farmer To Perform Harvesting Feat

A harvesting feat which would have been an impossibility a year ago will be performed this year on the Christian county farm of Sam Baughman, near Palmer, as a result of a simple terracing system which he built with the help of the extension service of the College of Agriculture, University of Illinois, according to a report by E. G. Johnson, farm mechanics extension specialist.

Baughman will use a binder and tractor in harvesting a crop of oats off the 20-acre field that was terraced. A year ago, before the terraces were built, the field was so badly gullied that it could not be crossed with harvesting machinery and some places were so bad that they could hardly be crossed on foot. One gully was so deep that it took a day and a half with a scraper and a road grader to get it in shape so that it could be crossed with the tractor that was being used in building the terraces.

Baughman was so well pleased with the terraces on the 20-acre field that this spring he terraced 35 acres more that also were badly gullied. Now he has 55 acres of additional land that can be easily farmed, whereas formerly he had nothing but small fields between gullies and ditches. In addition he is holding the soil in place and building up the fertility, Johnson pointed out.

Ordinarily it is more profitable to terrace the better land that is subject to erosion than it is to terrace badly gullied fields, Johnson explained. Sheet erosion skims off the fertile top soil and after it is gone erosion takes place faster and gullying is more likely to occur. It is easy to see that if terracing will stop gullying it certainly will stop sheet erosion, Johnson said.

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More Illinois Farmers Now Using Beef Profit Booster

Many Illinois farmers this summer are supplying the needed "push" for more profitable beef-making on their farms by feeding a little grain to beef calves on pasture, says E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. Beef calves are now getting grain on many farms where before all the calves ever had during the grazing season was grass and the cow's milk, he reported.

The new system is part of the college's program to help farmers take up some of the slack in beef raising by saving both time and feed. If beef cattle prices should drift lower during the coming year, those who push their calves with grain on pasture also may gain an advantage in prices.

Visitors during the college's annual open house week say how easy the job is done. A small self-feeder was put in a pen a rod square and located in a corner of a bluegrass pasture near the water tank. The opening to the pen was 20 inches wide and 3 feet high. The young calves had not been fed grain before going to pasture with their cows, but they soon found the way through the "creep" and learned to eat.

Shelled corn, or corn and oats or corn and a little linseed meal may be used satisfactorily as a feed for such calves. They do not eat much but what little they do eat does them lots of good, Robbins explained. Such calves usually weigh 100 to 150 pounds more in the fall than calves getting no grain before weaning.

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Cattle Feeders To Have Annual Day At U. Of I. Aug. 1

Eight months of feeding experiments conducted by the College of Agriculture, University of Illinois to answer live questions in the state's beef cattle feeding industry will be terminated with the annual cattle feeders' day, Friday, August 1, it is announced by R. R. Snapp, assistant chief of beef cattle feeding.

Ordinarily the season's experiments are finished in time for the college to hold its annual cattle feeders' day by the first of July. This year, however, the lighter appetites of the calves on feed delayed some important comparisons and hence the tests will not be finished before the latter part of July. Scores of cattle feeders, failing to see any notice of this year's meeting and worrying lest they miss it, have written in asking when the meeting will be held.

High esteem in which cattlemen of the state hold the college's feeding experiments is reflected in the numerous inquiries about the date of the meeting, in the opinion of the animal husbandrymen of the college. The institution is generally recognized as having done much through research and teaching to make the feeding of beef cattle a success on more Illinois farms. This season's experiments are a valuable supplement to the work previously completed.

When this year's tests were started last November it was planned to run for the usual 200 days and as much feed was provided for the several lots as similar lots had eaten over an equal period the year before. However, it will take about 240 days to complete the test at the rate the calves have been eating. The reason the feed supply is the all-important factor, Snapp explained, is that one phase of this year's experiments involves a comparison of equal areas of corn harvested and fed as ear-corn silage and as sound, mature corn. The only way a fair comparison can be made between the two areas is to wait until all the feed has been eaten.

Two lots of beef calves, or 30 in all, have been fed ear-corn silage and one lot of 15 head has been fed the ripe, mature corn in the form of corn-and-cob meal. Although all of these calves have eaten less corn than similar cattle in previous years, their gains to date have been very satisfactory. For the first 200 days of the experiment, the ration containing the ear-corn silage produced higher gains, which was the case in a similar trial last year.

Other trials which are under way at the present time and on which results will be available at the time of the annual meeting are a comparison of corn silage and clover hay as roughages for fattening beef calves and a comparison of normal corn silage and green stover silage for wintering stocker calves which are to be fattened on grass the following summer.

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New Chemical May Deal Quick Death To Noxious Weeds

Recent success with chemicals known as chlorates has started scientists on a new and hopeful search for a long-felt need - a magic method of killing weeds, it is reported by J. J. Pieper, assistant chief in crop production at the College of Agriculture, University of Illinois. The experiment station of the college, as well as the experiment stations of almost every corn belt state and many outside the corn belt, have begun experiments with the use of chlorates in the control of weeds.

First used as weed killers in the United States only five years ago, chlorates have produced both some grand successes and some miserable failures, Pieper said. This is the result, no doubt, of ignorance in the use of the materials, for only a small amount of experimental evidence has been secured on their value, he explained.

"Chlorates are highly promising in the control of noxious weeds, but their use should be confined to small amounts until such time as experimental evidence will permit more definite recommendations. It is advisable for users to try out chlorates on different kinds of noxious weeds and under varying conditions of soil and moisture on small areas, in order that as much information as possible may be accumulated on their use in a short time. The point has not been reached where chlorates can be recommended with the assurance that they will be successful under all conditions. While many of the failures can be explained at the present time, some of them are still puzzling even to those who have had much experience with the chemicals. It is hoped that sooner or later recommendations which will guarantee a higher degree of success can be made with respect to time and rate of application".

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Gets 14 Bushels More Corn After Phosphating Land

Harvesting 14 bushels more corn to the acre, Dan Miner, a Champaign county farmer, has built up his yield efficiency and net profits and improved the quality of his crop by treating his land with rock phosphate, according to a report by C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois.

The rock phosphate was applied in 1918 on cornstalk ground before oats and red clover were sown. It was used at the rate of 1,700 pounds an acre on 20 acres. An adjoining strip was left untreated for comparison. Even that same year the effect of the phosphorus was noticeable on the oats and red clover, although no yields were taken for comparison.

Last year the field was in corn and even the early growth of the crop showed the affects of the phosphate. As a result, corn on the phosphated part of the field ripened about two weeks earlier than that on the untreated part. Corn on the phosphated 20 acres yielded 64 bushels to the acre, while that on the unphosphated land made only 50 bushels to the acre. Besides yielding 14 bushels more to the acre, the phosphated corn was dry and sound, while the unphosphated was sappy and of poor quality.

Farmers can find out whether or not their soils are low in phosphorus by using the new test worked out by the College of Agriculture, University of Illinois. To help spread the method, farm advisers of the state are cooperating with the college extension service in holding soil testing meetings at which farmers test their land and map it for available phosphorus. The completed map shows where phosphorus will boost crop yields and improve the quality of the crop.

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New Plan Frees Turkey Raising Of Its Worst Risks

A young turkey in the pen is worth two on the range, judging from a new circular, "Rearing Turkeys in Confinement", which has just been issued for farmers and other interested persons by the College of Agriculture, University of Illinois.

During the past few years a number of people in Illinois, as well as in other states, have had good results from raising turkeys in confinement. In contrast, little success has been had thus far in Illinois when turkeys have been allowed free range with other poultry, it is pointed out by H. H. Alp, poultry extension specialist and author of the circular.

"Anyone who contemplates keeping turkeys in Illinois can hardly afford to overlook the method of rearing them in confinement. It provides conditions which help materially in preventing blackhead and worms, two of the worst scourges of the turkey raising business. While the method takes considerable careful work, the results more than pay for the labor.

"Under the confinement system, the plan of yarding generally followed in this state is very similar to the plan used and recommended in other states. The brooder house is located on ground on which poultry has not ranged for two or more years. This insures freedom from blackhead and worms, a highly important precaution. The young birds are let out in one of four small yards that generally measure about 10 by 15 feet each. These yards are used in rotation, the young turkeys remaining in each yard for ten days to two weeks. By the time they have been in the fourth yard for about two weeks they should be roosting and able to do without brooder heat.

"As an alternative to the yarding system recommended for the first six to eight weeks, a wire-floor pen may be used in connection with the brooder house.

"From the brooder house the young turkeys may be moved to a rearing range. ne to $1\frac{1}{2}$ acres of good sod, clover or alfalfa range is generally considered enough for about 100 turkeys from the time they are six to eight weeks old until they are of arketable age. The range is divided into four sections, each being used about a onth. A very cheap roosting shelter usually is provided."

Incubation, feeding turkeys in confinement and care of breeding stock also re discussed in the circular. It is No. 357 and may be obtained by writing the ollege.

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458 Farmers Are Honor Roll Pork Raisers Of State

Strong advocates of up-to-date methods, 458 farmers in 24 Illinois counties ave qualified for the honor roll of progressive hog raisers in their respective ounties, it is reported by E. T. Robbins, livestock extension specialist of the ollege of Agriculture, University of Illinois. To make the honor roll, hog growers ust follow the swine sanitation system advocated by the college and balance the corn or hogs with feeds supplying protein at a low cost a pound.

The 24 counties which maintain an honor roll of hog raisers are Adams, Brown, ureau, DeWitt, Greene, Hancock, Henderson, Henry, Iroquois, Jo Daviess, Knox, Lee, ivingston, Mason, McDonough, McLean, Ogle, Piatt, Sangamon, Schuyler, Stark, Vermilion, abash and Woodford.

Hog feeding schools designed to give farmers the latest information on more rofitable pork production were put on by the college extension service in these and ther counties of the state during the past winter and spring. Nearly half of the men ttending some of the county hog schools have qualified for the honor roll, Robbins sai

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Say Cheap Grains Can Be Fed With Profit To Stock

At present low prices for wheat, Illinois farmers can turn the crop into profits by feeding it to hogs and other livestock, it is advised by animal husbandrymen at the College of Agriculture, University of Illinois. Ordinarily wheat is too expensive for hog feed. Present market trends are such, however, that the feedlot may be a profitable outlet for at least some of the crop now being harvested in the state, it was pointed out.

Wheat when coarsely ground is worth about as much as the same weight of shelled corn for hogs and sometimes it gives just a little better results than corn, according to E. T. Robbins, livestock extension specialist. When wheat is 75 cents a bushel and can be ground for 5 cents, making a total of 80 cents, it will pay to feed the wheat instead of 75-cent corn, he said. However, corn at 70 cents a bushel likely would be the more economical feed. Ground wheat has about the same value for other stock as for hogs.

Wheat has more protein than corn and hence the farmer's outlay for protein supplements would be less with this grain than if corn was being fed, it was explained by W. E. Carroll, chief in swine husbandry. When corn and tankage are fed it takes in the neighborhood of 10 per cent of tankage to balance the ration. The same proportion of protein can be supplied by 7 to 8 per cent of tankage if wheat is used.

Unless the wheat is ground there is a waste of 16 to 22 per cent, because the same kernels are not well chewed by the pigs and pass through undigested. Soaking will not take the place of grinding. Fine grinding, however, is not necessary. If the kernels are merely broken in two the juices in the pig's digestive system will make use of the grain. Finely ground wheat is not relished as well as coarsely ground because of the pasty mass it forms in the mouths of the pigs when they are eating.

With new oats worth 30 cents a bushel or less in some Illinois counties and corn worth 70 cents or more, it will pay farmers to use oats liberally for hogs, unless the slower rate of gain on the oats will get the pigs onto a later and lower-priced market, Robbins said. Also at prices prevailing in most counties of the state, whole oats for work horses and calves and coarsely ground oats for older cattle may well replace much of the corn, he added.

"Oats for hog feed are worth about half the price of corn a bushel. When oats are fed with three times their weight of corn, their feeding value a pound often is equal to that of corn. When fed as the only grain to growing shotes or fattening hogs, oats are likely to be worth only about one-half to two-thirds as much a pound as corn. "When grinding is cheap it usually pays to grind oats for young hogs. It seldom pays to soak whole oats. If some corn is being fed, too, a good way is to feed the whole oats in a self-feeder and then shovel out what corn can be spared."

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Rabies Outbreaks Warn Communities To Fight Disease

A run of pronounced cases of rabies diagnosed during the past month in the laboratories of the College of Agriculture, University of Illinois has served warning that the disease is again spreading and should be fought with rigid campaigns in every locality of Illinois, it is announced by Dr. Robert Graham, chief of the laboratory of animal pathology and hygiene.

With warm weather here, children and other persons are in greater danger of exposure because they are spending more time out of doors, he pointed out. While dogs primarily suffer from the disease, significant losses of sheep, cattle, hogs and horses continue to occur as a result of exposure to mad dogs, he added.

"In communities where the disease has not appeared, it is advisable to employ self-imposed regulatory measures that will solve the problem of unvaccinated dogs. Muzzling often is recommended as a control measure in the suppression of rabies in dogs, but in practice this method of combating the disease has not met with popular favor among dog owners. At the present time one of the best safeguards that can be employed is the quarantine, by proper officials, of all dogs that have not been vaccinated by a competent veterinarian. If the vaccination regulation can be put into effect with the support of every community, rabies can be reduced and the danger of human exposure greatly lessened.

"Veterinarians recognize that the vaccine for dogs is not an infallible immunizing agent, but it is of enough value in preventing the development and spread of the disease to justify its use in connection with quarantine. Unfortunately, all dogs are not immunizable and in such cases vaccine may not provide the desired protection. Furthermore, the disease has a long incubation period and occasionally dogs are vaccinated which are already infected but which show no symptoms.

"Frequent inspection of suspicious dogs and humane disposition of strays is recommended. In case symptoms of rabies appear in dogs, the local veterinarian should be consulted promptly. Such animals should be placed in secure quarantine and observed two weeks. Persons exposed to rabid dogs should consult their physician without delay."

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Home Gardeners Will Find Celery An Exacting Crop

Popular as it is for fall and early winter use, celery is hard to grow in the home garden unless conditions are unusually favorable for it, says L. H. Strubinger, of the horticulture department, College of Agriculture, University of Illinois.

"Celery takes lots of water and consequently a high water table is desired. In the absence of such a water table, reasonably satisfactory results may be obtained from any one of the different types of irrigation. The chief precaution that must be observed is to apply the water in such a way that the plants are not beaten down into the earth and covered with mud. Dirt in the heart of celery is likely to lead to rots which will destroy the whole plant.

"The leaf spot is the most common disease likely to be present. This can be controlled effectively by bordeaux spray. The standard formula for bordeaux usually is used for celery, this formula being 4-4-40, or 4 pounds of copper sulphate in solution, 4 pounds of lime in solution and 40 gallons of water. If the plants are thoroughly and regularly sprayed with this mixture at intervals of ten days to two weeks there should be no trouble with leaf spot.

"Occasionally attacks of celery worm may occur, but if one pound either of lead arsenate or calcium arsenate is added to 50 gallons of the spray this pest will not have a chance to damage the crop."

Another Endurance Test To Be Staged - But Not In Air

Illinois is soon to be the scene of another endurance test, but this one will be fought out on the ground and not in the air where the Hunter brothers set their new world's record, it is announced by E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois.

Starting next month, 12 horse and mule pulling contests with two state championships at stake are to be held by the college in connection with fairs in different parts of the state. In setting their new record, the Hunter brothers kept their plane, "City of Chicago", aloft 23 days. To win a championship in the coming pulling contests a team will have to pull for a distance of 27½ feet a new-record load on the patented device known as a dynamometer.

The present state record for teams weighing more than 3,000 pounds was set by a pair belonging to E. J. Longley, a Mercer county farmer living near Aledo. This team lifted a load of 3,100 pounds on the dynamometer and pulled it the required 27½ feet. The championship for teams weighing less than 3,000 pounds is held by a pair of horses owned by Ralph Reeder, a Douglas county farmer near Tuscola. They lifted 2,725 pounds and pulled it the required distance.

Oddly enough, one of the contests is to be held at Sparta, home town of the record-holding Hunter brothers. Starting at Griggsville, Aug. 12 and 13, contests will be held at the Illinois State Fair, Springfield, Aug. 20 and 21; Tuscola, Aug. 22; Knoxville, Aug. 26; Belvidere, Aug. 29; Mazon, Sept. 2 and 3; Lafayette, Sept. 5; Aledo, Sept. 6; Augusta, Sept. 11; Petersburg, Sept. 19; St. Joseph, Sept. 24, and Sparta, Sept. 26.

The contests are part of a project being conducted by the experiment station of the agricultural college to study the relationship between pulling capacity and the weight, measurements and other characteristics of horses and mules. This will be the fifth year in which such records have been taken. During the past four years a total of 43 contests have been held in the state with a total of 522 teams entered. During that time the contests have furnished thrilling entertainment for the 157,000 people who have packed the ringside, according to Robbins. In all of the tests of strength not a man nor a horse has been injured.

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Color Is Too Luring To The Buyer Of Trees And Shrubs

Something almost as drastic as darkened glasses to shut out bright colors ought to be worn by most home owners when they pick out trees and shrubs in nursery catalogues during the next few months, in the opinion of O. G. Schaffer, of the division of landscape architecture, College of Agriculture, University of Illinois.

Today, he pointed out, most nursery catalogues feature those trees and shrubs with brightly colored flowers or fruit or with a foliage color different from the conventional green. Most prospective buyers are influenced more by these incidental characteristics than they are by others more important, he said.

"A plant must first of all be fit for the particular job assigned to it. This may be to provide shade, to screen out an objectional view, to serve as a windbreak, to frame in a view, to mark the entrance to the property, to accent some particular part of the picture or to serve as a hedge."

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Work Out Systems For Fertilizing Minor Vegetables

Ignored in most of the fertilizer experiments which different states have made in the past, minor vegetable crops, like carrots, parsnips and turnips, have had their inning in tests carried on during the past six years by the experiment station of the College of Agriculture, University of Illinois and reported in a new bulletin, "Fertilizing Twenty-Five Kinds of Vegetables". J. W. Lloyd, chief in olericulture, and L. H. Strubinger, assistant, who carried on the tests, are authors of the bulletin.

Special search was made for possible substitutes and supplements for manure. There is a scarcity of this material and various suggestions have been made in the past, including the use of cover crops to supply humus and nitrogen and the use of commercial fertilizers to furnish the other needed elements.

Taking into account not only increases in yield but also the net value of each treatment, the investigators made four recommendations for the fertilization of the 25 vegetables:

"1. Limestone in addition to manure is recommended for the production of the following vegetables on dark-colored silt loam showing acid reaction: cabbage, cauliflower, carrots, eggplant, garlic, lettuce (both leaf and head), onions, pepper and spinach.

"2. Phosphorus as a supplement to manure and limestone is recommended for the production of green string beans, carrots, early cabbage, celeriac, celery, eggplant, leeks, onions and parsnips.

"3. Potassium in combination with phosphorus, limestone and manure is recommended for the production of beets, kohlrabi, leaf lettuce, peas, potatoes, spinach and swiss chard.

"4. When manure can not be obtained it is recommended that a complete commercial fertilizer be used in combination with limestone and cover crops for the production of beets, cabbage, early carrots, cauliflower, celeriac, celery, leaf lettuce, onions, parsley, spinach, sweet potatoes, swiss chard and turnips.

"These recommendations refer particularly to the production of vegetables on dark-colored silt loam with an acid reaction. For soils of the same type in which tests show no lime requirement, the limestone could be omitted from the treatment".

It was not feasible to include all possible combinations of manure, cover crops, and mineral elements from various sources. The best results from phosphorus as a supplement to manure were obtained where no cover was grown. Phosphorus from one source only (bone meal) was used in such combinations. In the comparative tests of the three sources of phosphorus, cover-crop treatment was included on all the plots. Here the results were strongly in favor of superphosphate. Similar favorable results might have been obtained from the use of this material as a source of phosphorus in combination with manure without a cover crop, particularly if an equivalent amount of phosphorus had been applied.

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Two Months Left To Right Faults Of The Hen House

Faulty poultry houses are all too common on Illinois farms and less than two months remain in which to get them fixed up for winter housing of this year's pullets, says H. H. Alp, poultry extension specialist of the College of Agriculture, University of Illinois.

"It is not always necessary to build a new house. Often some unused farm building or the old hen house can be remodeled satisfactorily. There are, however, seven things of which the flock owner should be sure, whether the house is a new or remodeled one. First, it should be big enough to accommodate the flock, allowing four square feet of floor space a bird. Second, it should be thoroughly cleaned. Third, it should have a dry, sanitary floor. Fourth, there should be enough openings to permit the entrance of sufficient fresh air when needed. Fifth, it should have a non-leaking roof. Sixth, the old yard or range should have been cultivated and cleaned up. Seventh, there should be plenty of nests and feed hoppers. Every 20 by 20 foot house needs a feed hopper 10 feet long accessible from two sides.

"New buildings should not be started without first knowing the principles and general recommendations regarding good poultry house construction. Changing a building to correct mistakes is expensive. Blueprints of four poultry houses designed by the farm mechanics department of the College of Agriculture, University of Illinois are available at a cost of 20 cents each to cover printing and mailing.

"Some poultrymen have raised a question as to whether or not concrete floors are all right for poultry houses. When properly built this type of floor is satisfactory. Concrete put on the ground will absorb considerable of any available moisture. It is therefore highly essential to insulate a concrete floor against dampness. Instructions for building different types of concrete floors are given in the college's circular, No. 337, 'Housing Farm Poultry'".

-M-

Poor Dairying Under Fire Of Record Drive In State

With 1,500 organized farmers leading the fight, Illinois is waging the most concerted drive that it has ever carried on against "boarder" cows and profitless dairying methods, according to a report by J. H. Brock, assistant in dairy extension at the College of Agriculture, University of Illinois. Organized by the college to further improved dairying, a record number of 62 dairy herd improvement associations with 1,500 farmer members owning 23,000 cows are now operating in 78 different counties of the state, he said.

The new record has just been set with the organization of three more associations. A Menard-Mason county association will serve dairymen in a section which has not had this service to date, while a Kankakee county group will take up where a former disbanded organization left off. McHenry county already has two associations, but with the starting of the third organization a still larger number of McHenry county dairymen will have definite information as to the production of their cows.

Each of the associations employs a tester who keeps accurate records on the milk and butterfat production of all the cows in the association herds and otherwise assists the members in improving their practices.

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Fall Start Is Key To Success With Newly-Made Lawn

Fall, and not spring, is the time to start the new lawn, says S. W. Decker, of the floriculture division, College of Agriculture, University of Illinois, in answering this much-discussed question. If the job is put off until spring the young grass suffers from competition with the weeds and later on with the hot, dry weather of summer.

A soil prepared like it would be for a prize winning garden is none too good for the new lawn, according to Decker. If it is heavy clay it will need to have added to it some well-rotted manure, peat, sand and other material to open it up and make it more ideal garden soil. It should be remembered that while the soil of the vegetable garden is prepared and planted each year, the lawn soil is prepared and planted once to last for years to come. Time spent in preparation of the soil therefore is not lost. Seed planted on poorly prepared soil is, however, almost sure to be lost.

"Work the soil deep; six to eight inches is none too much. Pulverize all the clods, so that there are no low spots in which water may collect. Such low spots will be a continual source of trouble. The grass is very likely to be killed out in the low spots during the winter months, while that on the ridges will suffer during the dry summer months. The difficulty of mowing a rough lawn also is a point to be considered.

"Grass seed should be planted just as soon as fall rains are assured. Early planting gives the young grass roots a chance to grow to a good depth, which makes it possible for them to withstand the alternate freezing and thawing in winter. It is the heaving and the loosening of the soil about the roots that kills the grass. Grasses with big root systems are much better able to withstand this alternate freezing and thawing than grasses with shallow, weak root systems.

"If the young grass makes a good growth in the fall, say three or four inches, it should be mowed with the mower blade set high".

-M-

Famous Crop Alliance Giving Way To New Combination

Another famous alliance, one which farmers passed on to their sons and grandsons, is being split up, it is reported by F. C. Gault, assistant in soil experiment fields at the College of Agriculture, University of Illinois. Alfalfa is replacing timothy in the old overworked mixture of clover-timothy, he said. Many Illinois farmers already are growing an alfalfa-red clover mixture as a regular crop in their rotation, he reported.

High yields of fine hay produced by the new mixture is what spelled the doom of the old combination, Gault said. At the college's Carlinville soil experiment field the clover-alfalfa mixture yielded a five-year average of four tons of hay an acre on land treated with manure and limestone. On the Joliet field in 1929, land treated with manure, limestone and rock phosphate yielded close to four tons of hay. However, land on this field treated only with manure yielded but one-fourth of a ton of hay. At the Oquawka field, on dune sand, the clover-alfalfa combination yielded five tons of hay an acre on land treated with manure and limestone.

The mixture is handled like the usual clover crop, being allowed to stand only one year. In the first cutting the clover usually predominates, but in the succeeding cuttings the hay is largely alfalfa.

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Not Less Wheat But More Alfalfa Is Illinois Problem

While farmers in Kansas and the rest of the wheat belt are settling the question of raising less wheat, Illinois farmers should start growing more alfalfa, according to a new bulletin, "Growing Alfalfa in Illinois", which has just been released by the College of Agriculture, University of Illinois.

Farmers' figures show that alfalfa is one of the most profitable crops that can be grown in Illinois and yet about 200,000 tons of it were shipped into the state in a single year - 1928, according to the authors of the bulletin. They are W. L. Burlison, head of the college agronomy department, and O. H. Sears and J. C. Hackleman, members of that department.

While the acreage of alfalfa and other legumes in Illinois has been widely expanded during the past ten years, few counties are producing half the legumes which good practices would seem to justify, it is pointed out.

New facts gleaned by the college workers in more than 25 years of studying the many problems encountered in the growing of alfalfa under Illinois conditions are reported in the bulletin. It takes up the place of alfalfa in Illinois farming, soil needs of the crop, the merits of different varieties, methods of seeding, cultivating and cutting, and diseases.

Successful growing of the crop in Illinois depends largely on soil conditions, according to findings reported in the bulletin. Some Illinois soils are naturally adapted to the crop and others can be made suitable by proper treatment. The crop can not be attempted in some areas chiefly because of the lone problem of drainage.

Variegated alfalfas, such as Baltic, Grimm and Hardigan, are more winter-hardy under Illinois conditions than common alfalfas, the investigators found. Imported seed, except from Canada, and seed grown in southwestern United States is not recommended for Illinois.

Sowing alfalfa seed on sour soil invites failure, the investigators point out. Limestone to sweeten acid soil should be applied according to the needs of each individual field. Farm manure boosted alfalfa yields and was especially valuable in putting new seedings off to a vigorous start. Phosphorus can be used with profit on many soils. The need for this element, as for limestone, should be determined for each individual field, it is recommended.

Where alfalfa is to be grown for the first time, careful attention must be given to thorough inoculation of the seed. Most Illinois soils lack the bacteria that form nodules on and fix nitrogen in the alfalfa plant.

Spring seeding of alfalfa has given best results in northern Illinois and is gaining favor downstate.

Three alfalfa diseases are of importance in Illinois, Bacterial wilt has destroyed fields in many counties. Leaf spot and yellows are frequently present but not so deadly and their attacks are more or less seasonal and irregular.

-M-

T. B. Is Unseen Wrecker Of Many Farm Poultry Flocks

Many unsuspected poultry flocks that are harboring tuberculosis have been found as the result of the tuberculin testing of chickens in scores of communities in Illinois, it is reported by W. A. James, of the animal pathology and hygiene division of the College of Agriculture, University of Illinois. As is the case with the cattle and swine types of the disease, tuberculosis in chickens does not show symptoms except in the final stages of the malady, he explained. Hence it may be riddling a flock without the owner's knowledge. Lameness, emaciation and paleness of the comb are signs of the disease, but these same symptoms also are common to other diseases.

"A definite diagnosis of the disease depends upon an autoposy examination. Owners suspecting the presence of the disease in their flocks should take typically infected specimens to their local veterinarian for examination.

"Tuberculosis is more prevalent in old fowls than in pullets. In fact, pullets rarely develop an advanced stage of the disease or become spreaders of the infection. Young chicks should be placed on fresh ground each year until they go into winter quarters. It also is advisable to sell or dispose of the old fowls and keep the pullets. The practice of annually disposing of pullets after the first laying season is valuable in preventing the spread of the disease in many flocks.

"Tuberculosis in cattle is not communicable to poultry nor is the disease in poultry transmitted to cows. Occasionally, cows may contract avian tuberculosis. However, tuberculosis both in cattle and poultry is communicable to pigs. Hogs infected with the bovine type of tuberculosis rarely transmit the disease to poultry, while hogs with the avian type of the disease are potentially dangerous to chickens.

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Can Start Sheep Flocks Now Without Big Cash Outlay

Many farmers who have been waiting to buy cheap sheep will have a good chance within the next few months to start flocks without a large outlay of cash, says W. C. Kammlade, in charge of sheep husbandry at the College of Agriculture, University of Illinois. Investing in a flock of ewes at this time seems to offer the prospects of reasonable profit, because of the small investment a head and prospective low prices for feeds, he said. Whether or not such ventures will prove as profitable as now indicated will depend largely upon the future course of the lamb and wool markets and upon the man buying the sheep, he added.

"Not all sheep are profitable and the buyer must know the essentials of good ewes in making his selections. Ewes should be picked for their indicated ability to grow a good heavy fleece and to produce and raise lambs. Health, constitution, ruggedness, conformation and size, length and density of fleece are important considerations. Ewes in poor health and lacking constitution are far out of date as lamb raisers. Depth, width and roominess of body are suggestive of good feeding and lamb raising qualities. Slight defects in conformation are far less important than the above.

"When the ewes have been secured, the flock is only half founded. The other half is the ram and he is just as important as all the ewes put together. If forty ewes are half the flock and cost two or three hundred dollars, no farmer should expect to buy a ram as the other half of the flock for four dollars. A good sire easily is worth ten times the cost of the average ewe. There is nothing to be gained by sneaking around the darkened alleys of the stock yards to buy a ram. Purebred breeders have something more suitable for the prospective flock owner."

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Paved Lot Steers Pay $7 More Than Those Fed In Mud

Under present methods of feeding, concrete pavement for cattle feeding lots has become so important that it is worth $7 a year for each head of cattle fed, at which rate it would pay for itself in a short time, it is pointed out by R. R. Snapp, assistant chief of beef cattle husbandry at the College of Agriculture, University of Illinois.

When cattle are fattened in paved instead of muddy lots, the hogs following the steers make added gains valued at $2 for each head of steers, labor costs for feeding are reduced $1 for each steer, there is a saving of $1.50 a steer in manure and the steers make added gains valued at $2.50 because of their greater comfort, Snapp reported.

"Because of these advantages a small paved lot adjoining an open shed is next to the most valuable piece of equipment on a livestock farm. Only the silo is more important.

"Muddy feed lots impose a severe handicap upon winter-fed cattle. Many a man has had to ship half-fed cattle to market for no other reason than to get them out of muddy lots in which they were standing up to their knees. Others have permanently abandoned late winter and spring feeding, thereby acknowledging their defeat in the annual battle with mud and slush.

"In the early days of cattle feeding, large amounts of corn fodder were fed. The refuse from this formed a thick layer sufficient to bear the weight of the cattle. Feeders of the present day with their silos full of silage do not feed much shock corn, while the short straw varieties of small grain crops commonly grown provide altogether too little bedding to permit its use as pavement in feed lots. In fact, with the growing use of the combined harvester-threshers, more and more straw is left in the field with the result that an adequate supply of bedding material is becoming a real problem in many communities."

-M-

Turns Tables On Pig Troubles By Taking Up Sanitation

One pig that was killed accidentally was all that robbed L. F. Randolph, a Fulton county farmer, of a perfect pig raising record after he took up sanitation and other modern methods, whereas a few years ago he was fighting a losing battle against all the problems that can pile up on a farm where hogs had been raised under old methods for 50 years. He is only one of the hundreds of Illinois farmers who are now following the swine sanitation system and economical feeding as advocated by the College of Agriculture, University of Illinois and county farm advisers, according to a report by E. T. Robbins, livestock extension specialist.

Up until a year ago Randolph had escaped few of the costly pig troubles common in old hog lots. With old methods of hog raising having been followed for 50 years on the farm he was operating, many of his pigs died of worm troubles each year and many others were runts. A year ago he made a thorough cleanup, scrubbed the hog house, washed the sows, hauled the sows and their litters to clean pasture and kept them on this clover pasture with ground oats, tankage, linseed meal and salt until they were turned into the cornfield in the fall.

Under this system he had 128 pigs farrowed in April last year and marketed 127 of them in November at an average weight of 268 pounds. The pig that was accidentally killed was the only one which wasn't turned into profits under the new plan.

This year Randolph is continuing the same plan and his 185 April pigs are a healthy, thrifty lot.

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Marketing Studies Reveal Way To Lower Fruit Losses

Damaged fruit, now a heavy drain on the profits of Illinois fruit growers, could very largely be prevented by proper precautions in picking, handling, grading and packing, according to results of tests which the experiment station of the College of Agriculture, University of Illinois has just completed and reported in a new bulletin, "Some Factors Influencing the Keeping Quality of Fruit in Transit".

Three phases of the problem were investigated by the college workers in attempting to work out ways whereby Illinois growers could protect their profits. They studied the careful vs. rough handling of strawberries, summer apples and peaches; prompt vs. delayed loading of these same three commodities, and the use of different types of packages for strawberries and peaches. The work was done by J. W. Lloyd, chief in olericulture, and H. M. Newell, associate in fruit and vegetable marketing, the authors of the new bulletin.

Different operators use widely varying methods of picking, handling, grading and packing Illinois fruits on a commercial basis, but altogether too frequently these methods result in mechanical injury to the fruit before it is shipped, impairment of its keeping quality and reduction of its market value, the investigators found.

Among their recommendations were the following:

"Growers should place a premium on quality rather than quantity of work done in handling fruit. Two baskets of fruit handled with such speed that every specimen is bruised are likely to yield the grower less net return than one basket properly handled.

"The pan grading of strawberries, while not adapted to the handling of soft varieties, is perfectly feasible in the case of firm varieties and if done with proper care does not damage the berries. It makes the product more attractive to the trade.

"Special care is required to pack bushel baskets of peaches and apples at just the right degree ot tightness to avoid injury to the fruit in putting on the cover and at the same time prevent slackness in the package after shipment.

"The more quickly fruit can be placed under refrigeration after it is picked the better its carrying quality is likely to be. Delay in loading is especially likely to be disastrous if the temperatures are high. There are decided advantages in picking fruit in the morning while it is cool and placing it immediately under refrigeration.

"A slight change in construction of the standard ventilated strawberry crate so that an additional one-fourth inch of clearance above the tops of the boxes is provided would make it possible to have the boxes full upon arrival without having the top berries crushed by tight packing".

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Egg Producers Have Three Moves Against Low Prices

Prospects that egg prices will continue on a relatively low level for some months leave three lines of action open to the shrewd Illinois poultry flock owner, it is pointed out by F. E. Elliott, assistant in poultry husbandry at the College of Agriculture, University of Illinois.

They should : (1) strive for low-cost production; (2) avoid unwise expenditures especially for expansion, and (3) improve quality so as to increase returns, he recommended.

Storage stocks of frozen eggs on July 1 were 36 per cent heavier than at the same time in 1929 and 76 per cent heavier than the average of the past five years, Elliott reported. Frozen egg channels consequently will not be much of an outlet either for fresh or storage shell eggs during the next six months. Present stocks of storage shell eggs are 26 per cent larger than at the same time last year and 14 per cent larger than the average for the past five years.

"Consumer demand has not been strong so far this year and although it seems to have been showing some improvement recently, there probably will be no strong active demand until business conditions improve. Present production is practically normal, but a fairly heavy fall production can be expected for two reasons: (1) figures recently compiled indicate that there are 6 per cent more chickens in the country than last year, and (2) earlier hatchings this past spring will allow for longer and heavier fall pullet production.

"In meeting this situation poultrymen have a change to sell off hens laying small or badly shaped eggs, as well as poor layers and improperly marked individuals. Furthermore, it is not worth while at present prices to crowd a pullet into early production for the sake of some small early eggs. The prospects are that for a pullet to return a profit this year she must show a long steady production of eggs of full market value. It is up to her owner to prepare her for this by starting her into the laying season as a well matured individual with a strong constitution and a store of surplus fat."

-M-

Faulty Scales Business Handicap To Illinois Farmers

With present-day business being done on a weight basis, farmers are being put at a disadvantage because comparatively few farm scales are accurate within the commercial meaning of the term, it was revealed by checks made by the livestock marketing division of the College of Agriculture, University of Illinois.

Farmers must either make sure that their scales are accurate and dependable or they must take the weights of those with whom they do business, it was pointed out by R. C. Ashby, associate chief of livestock marketing. There is, he believes, great need for competent servicing of farm scales on a basis of reasonable cost. Before such service can be successfully operated, however, owners must be shown how inspection, testing and servicing of farm scales will pay, he said.

It was found that few farm scales get adequate maintenance attention, including inspection, cleaning, adjustment or testing. Second many of the installations are old, having been in service for 20 to 40 or even 50 years, and due to weather, rust and wear are fast reaching a condition where their performance is not dependable. Third, many of the later installations were a cheaper type of scale which are less satisfactory in several respects than were the scales installed earlier. Fourth, increasing use of motor trucks frequently results in overloading farm wagon scales, often with permanent injury to the scale. Fifth, farmers are interested in good scales and appreciate anything that will assist them in that direction.

-M-

Exempting Co-Ops From Income Tax Held Sound Plan

Even with farmer cooperatives more prominently in the public eye than they have ever been, there is still a rather general misconception as to why cooperative associations have been exempted from income taxes on their annual net accumulations, it is pointed out by Dr. Charles L. Stewart, chief in agricultural economics at the College of Agriculture, University of Illinois.

Such exemption is necessary in order not to force cooperatives into awkward and unfortunate business practices, particularly into the practice of "paying dividends over the scales", he explained.

The exemption need not involve injustice to competing corporations. Neither is it given with the idea of providing a more legally acceptable way of favoring such associations than would be the case if straight grants of treasury funds of comparable value were made by legislative appropriation, he said.

"If no system of exemption were provided by law, cooperatives could keep their accumulations at the end of the year down to a very small figure and thus avoid income taxation by paying patrons whose goods they buy an enhanced price day by day or by charging patrons who buy goods from them a reduced price day by day. In case such a practice of letting each transaction show immediately the effect of the cooperative is followed, however, the public treasury gains nothing by refusal to exempt, the cooperative's competitor may have to face a price war and the cooperative organization itself has to lose some of the benefits which come from bringing together and disposing of accumulations at the end of the year.

"Where the accumulations are refunded to patrons on the basis of patronage during the year past there may be no difference in dollars and cents to the patrons than would have come if the method of 'paying dividends over the scales' had been followed, but the patrons stand a better chance of fully appreciating the price benefits when brought together as a total. Annual instead of more frequent distribution of the patronage refunds also may make it easier for the cooperative association to get recognition at the bank for its deposits."

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Originate Tasty, New Ice Creams By Adding Honey

Honey, used in the human diet for centuries, has been cast in a new role as a result of experiments just concluded by the experiment station of the College of Agriculture, University of Illinois. It was established that honey can be used satisfactorily to replace 50 to 100 per cent of the sugar in an ice-cream mix and in these proportions gives so distinct a flavor that a new and pleasing variety is obtained. Fourteen different honeys were studied in the experiment and twelve of these were actually used in making ice creams, thus giving a wide range of flavors. Results of the experiments are reported in detail in a new bulletin just released by the College under the title, "Use of Honey in Ice-Cream Manufacture". The authors are P. H. Tracy and H. A. Ruehe, of the dairy manufactures division, and F. P. Sanmann, formerly a member of that division. The experimental work was done by them.

Previous to the experiments the use of honey in commercial ice-cream manufacture had been rather limited and practically no information was available regarding the merits or disadvantages of honey as compared with sugar for sweetening ice cream. It was calculated that a honey ice-cream mix cost about four cents a gallon more than a mix flavored with pure vanilla and sweetened with sugar. The cost, however, was about 11 cents a gallon less than that of the average fruit mix.

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Next Five Years May Bring Less Favorable Wheat Prices

Low wheat prices which have prevailed in recent months exaggerate the weakness of the wheat situation when viewed from a long-time basis. A generally weak economic situation throughout the world coupled with an enormous carryover of wheat in the United States and Canada have been important factors in the weak market that prevailed down to the first of September. Wheat prices in the past have gone through irregular cycles of alternately high and low prices. The last peak came five years ago in 1925. It appears quite likely that prices have passed through the trough of the current cycle and that within a year or two they will be substantially higher. Reduction in production because of some curtailment in acreage, short crops that are bound to occur somewhere in the world, heavier feed use and a general improvement in the economic situation will be factors that will tend toward improvement.

However, it is not likely that wheat prices will average quite as favorably in comparison with the average of other farm prices over the five year period 1930-1935 as they did from 1925-1929. Wheat production is expanding in certain sections of the United States and in various foreign countries at a very rapid rate. New types of machinery and new methods of production in the drier regions of many countries are tending to a rapid expansion. The importing countries of continental Europe have greatly increased their import duties against imported wheat. Production of the other major Illinois farm products is not likely to expand as rapidly as will wheat.

In making plans for future wheat plantings farmers should not be unduly influenced by the prices that have prevailed since the harvest time of 1930 but they should keep in mind that there are good reasons to believe that relationship of wheat prices to other farm products is likely not to average as favorably as over the five years previous to 1930. - L. J. Norton, assistant chief in agricultural economics, College of Agriculture, University of Illinois.

-M-

Cheap Wheat May Replace All Or Part Of Corn For Cows

With wheat selling under the price of corn, many farmers are using or considering the use of wheat in the dairy ration. Present conditions warrant its use for dairy feeding purposes. It is a good feed and may be successfully used for dairy cows.

Wheat contains 12.4 per cent of total protein and 80.1 per cent of total digestible nutrients, while corn contains 9.6 per cent total protein and 81.7 per cent of total digestible nutrients. When ground wheat has approximately the same feeding value as corn for dairy cows and may replace a part or all of the corn in the ration.

At present prices wheat is selling at approximately $28.00 a ton and corn at $33.00. Under these conditions, wheat would furnish 100 pounds of total digestible nutrients at $1.75 while 100 pounds of total digestible nutrients in the form of corn would cost $2.02. Wheat is not a high protein feed, consequently high protein supplements should be used with it and other farm grains under average conditions. - C. L. Rhode, dairy extension specialist, College of Agriculture, University of Illinois

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U. of I. Tests Save Loss Of Silage Through Spoilage

A large amount of silage at the top of the silo spoils after the silo is filled, unless feeding is begun at once or some means taken to stop the decay. When the silage in silos measuring from 12 to 16 feet in diameter is allowed to stand several months before feeding is begun, the losses may amount to as much as 5 to 10 tons, or more. Much of this loss can be prevented by covering the surface immediately after the silo has been filled. Three years' experiments carried out by the department of dairy husbandry, College of Agriculture, University of Illinois, have brought out practicable and inexpensive methods of covering the silage.

The best of a number of methods tried is to cover the silage with a good grade of roofing material and weight this down with some finely pulverized material such as sawdust, dry earth, or ground limestone, applied at the rate of about 15 pounds to a square foot. Experimental silos treated in this way and opened for feeding three months after filling, showed no spoilage whatever over most of the surface. The only spoiled silage was found next the wall where air leaked in between the wall and the covering.

Before the covering is put on, the silage should be leveled and thoroughly tramped. The roofing material, which comes in rolls about 3 feet long, is applied one or two strips at a time, lapping the joints well. The sawdust, or other substance used as a weight, is then spread evenly over the roofing, care being taken that no holes are made in the roofing by stepping on it or in any other way. When the silo is opened for feeding, the material used as a weight may be placed in sacks and stored at the top of the silo until the following season.

Experiments have shown that the roofing material is the important feature in this plan. Covering the silage with sawdust, straw, or lime alone was much less effective than when these substances were applied at the same rates on a square foot over the roofing.

Earlier studies in which the surface silage was sprinkled with a solution of a chlorine compound commonly used in washing dairy utensils showed that the treatment delayed spoilage for a time. Three months after filling, however, there was little difference between the treated and untreated silos. - W. B. Nevens, assistant chief in dairy cattle feeding, College of Agriculture, University of Illinois.

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Corn Following Sweet Clover Weathered Drouth Better

The record breaking heat and drouth has severely cut the corn crop for 1930. Probably all fields have been damaged to some extent, but from farm to farm there is a great difference in the amount of injury. A survey of the crop rotations in use shows the importance of the previous crop.

Sweet clover, only a short time ago thought of as a dangerous weed, has during the recent dry weather, demonstrated its worth more clearly than ever before. Corn growing on land which had sweet clover in 1929 is conspicuous now by its healthy color, larger growth, and freedom from firing.

A typical illustration of this is seen on the Malmquist farm in Bureau county north of Ladd. A strip across one side of an oats field was seeded in the spring of 1929 to sweet clover as a catch crop. Corn in this part of the field was thrifty with only an occasional dry leaf. It may yet make 35 to 50 bushels an acre. In the rest of the field the corn was so badly damaged that it can not possibly make more than one-half this much.- L. B. Miller, assistant in soil experiment fields, College of Agriculture, University of Illinois.

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Three Evils Make Poultry Houses Damp And Cold In Winter

That damp poultry house last winter was the fault of the flock owner and not the weather man. There are three reasons why poultry houses are damp and cold and the weather man shouldn't get the blame for any of them. They are poor drainage, overcrowding and poor ventilation. Any one of them is bad enough, two of them are worse and all three together take all the poultrymen's profits. One or all of them can be remedied at a small expense of time and money.

Good drainage means a dry floor and a warmer floor. Tiling will improve conditions and carry away the water which otherwise would be partially conducted through the floor. Correct grading will carry the surface water away from the house. Never excavate for the floor but put cinder or gravel fill on the ground and concrete or tile on this and then grade to the floor.

Crowding is done by housing more birds than the owner has facilities for. There should be four square feet of floor space a bird and never less than 2½ square feet for the young pullet or small birds. This provides 25 to 30 cubic feet of air a bird, which is enough to last 35 to 50 minutes and still be reasonably pure and dry. Fresh air added slowly provides this air change and prevents a cold house caused by quick air changes.

Ventilation means intelligent management rather than expensive equipment. The open front house properly handled is safe, but sound judgment must be used even with it. For instance, many houses are built well with little air leakage. The pullets have just started to lay and eggs are bringing a good price. The weather is mild and the radio startles us by announcing, "Cold wave coming; it will be ten below before morning". Too often the decision is: "Those poor chicks; I must close the front". Sashes are hastily set in place and the chicks suffer for want of fresh air. The house is damp and cold before morning and frost covers the ceiling. The chicks are chilled and sluggish and the next morning the frost is much heavier. A little common sense would have suggested muslin sash or a curtain and the birds would still have had sufficient fresh air and a more comfortable and healthful house.-W. A. Foster, department of farm mechanics, College of Agriculture, University of Illinois.

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Model Of Eight-Horse Hitch Used To Further Big-Team Plan

A model of an eight-horse team hitched in modern fashion is traveling a circuit of 18 counties to further the state-wide work which the extension service of the College of Agriculture, University of Illinois is carrying on for big-team hitches as aids to economy and profits. The exhibit, which is owned by the agricultural college, includes eight metal horses about 10 inches tall, each wearing a complete harness. The horses are hitched in 4-, 5-, 6-, and 8-horse teams to little plows and disks, using buck straps and tie chains. When hitched in this way with two lines on the leaders the model outfit shows just how the full size equipment is used in actual field work.

This outfit started out in July and will return to the college in November. The schedule of counties for July was Piatt, Mason, Schuyler and Brown; for August, Macoupin, Sangamon and the Aurora Fair; for September, Iroquois, Greene, Morgan and Livingston; for October, LaSalle, Knox, Henry and Jo Daviess, and for November, Lake and McLean.

Excepting when taken to a fair, the model is displayed in the farm bureau office of the county. All of the counties using this model are emphasizing the big team project in their program of work this year.-E. T. Robbins, livestock extension specialist, College of Agriculture, University of Illinois.

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Announce Simple Method Of Protecting Stored Grains

Insect damage to stored grain, which every year takes a toll of many millions from farmers of the United States, can now be prevented by a simple and cheap method of treatment worked out in two years of cooperative experiments by the Illinois State Natural History Survey and the experiment station of the College of Agriculture, University of Illinois, it was announced today. W. P. Flint, chief entomologist of the survey, and C. O. Mohr, an assistant, were in charge.

Materials developed primarily for the spraying of fruit trees proved the source from which the investigators got their most effective weapons. These materials are certain of the so-called lubricating oil emulsions, miscible oils or summer oil emulsions. The tests were made with corn, the ears being dipped into the liquids. Both treated and untreated ears were then stored under conditions where corn destroying insects were excessively abundant.

Treated corn was almost completely protected against injury by the insects in five series of tests each extending over at least a six months period. Germination tests later showed that the treated corn grew as well as untreated. Feeding tests with white rats showed no injurious effects from the treatment.

For many centuries man has been storing grain for his own use and then sharing it with insects, Flint pointed out. Even with all the preventives that have heretofore been worked out, the measurable loss constantly runs above the one million dollar mark in single states and into several millions in each of the southern states, he reported.

The new method developed in the Illinois tests is superior for many situations to means, developed in the past, including special storage bins, fumigation and heat treatment. Conditions under which the tests were made were as severe as possible, the treated and untreated corn being stored for five months in rooms where the Angoumis grain moth, the rice weevil, granary weevil, Indian meal moth, confused flour beetle and saw-toothed grain beetle were excessively abundant.

Corn treated with homemade lubricating oil emulsion used in the proportion of 1 part of oil to 8 of water had 9 per cent of the kernels injured by insects. Corn treated with a commercial summer oil spray used in the proportion of 1 part of oil to 10 of water had 3 per cent of the grain infested. Corn treated with another commercial spray oil that was used in the proportion of 1 to 10 had five-tenths of 1 per cent of the kernels injured. Unprotected corn stored in the same room under the same conditions had 100 per cent of the grains injured.

"Final recommendations can not yet be made, but the results to date indicate that the method bids fair to reduce by many millions of dollars the present insect damage to stored grain, especially in the southern part of the United States," Flint said.

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Printed in furtherance of the Agricultural Extension Act approved by Congress May 8, 1914. H. W. Mumford, *Director.*

New Price Plan Overcomes Faults In Milk Marketing

A new milk marketing feature designed to overcome faults in the majority of milk marketing plans now in operation in different cities of the country is outlined in a new circular, "Price Plans for Marketing Milk", which has just been released by the College of Agriculture, University of Illinois. Dr. R. W. Bartlett, first assistant in agricultural economics and author of the circular, devised the new arrangement. It is known as the equalizing-value price plan. Two other systems are described along with the new one.

Most of the present milk marketing plans are not on a strictly economic basis in the distribution of proceeds to producers. Like other plans, the equalizing-value price plan provides for the sale of milk to distributors on the basis of the values in the uses to which it is put, such as fluid milk, cream, ice cream, evaporated whole milk, butter and other uses. The new plan differs from the others, however, in that it provides for the distribution of proceeds to each producer on the basis of value contributed.

The new plan already is in operation in the Pittsburg, Pa., and Peoria markets and is being taken up in the Champaign-Urbana, Bloomington and Decatur markets.

By its two-price basis of payment, the equalizing-value price plan encourages a production which corresponds more closely to market sales, the circular points out. Use of this feature in conjunction with the flexible price feature in sale of milk to distributors makes possible the direct control of production at all periods of the year. This is of special importance in preventing shortages or overproduction.

"This plan works automatically from year to year in adjusting farmers' basic quantities to fluid sales. This obviates the necessity of frequent modifications in the structure of the plan.

"The plan is sufficiently broad in scope so that it can include buyers dealing exclusively in surplus milk as well as those whose sales are largely of fluid milk.

"The plan can be adapted to use in two or more adjacent markets without complications. This feature is of special importance in view of the probable consolidation of producers' association in some markets that now overlap".

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Horse-Power Plays Big Role In Plan To Cut Wheat Crop

Reduction of wheat acreage, which is the order of the day in American farming, can be done in a practical way in Illinois by growing the crop with horses and mules. This practice, which also would yield other benefits in the form of economical power, is advocated by E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois.

"Wheat farmers report that growing the crop with horses and mules makes it convenient to keep some land in pasture, hay, corn and oats for feed. Without the horses that land likely would be sown to wheat. Each horse eats the grain and forage produced by about three acres of land. The six horses commonly used to operate a 160-acre farm would eat the crop from 15 to 20 acres. This would help materially to reduce the acreage devoted to such cash crops as wheat.

"That many farmers are taking to the idea is indicated by the fact that five- and six-horse teams pulling gang plows have been a common sight in the wheat counties of Illinois ever since threshing was finished. Heat, flies and hard ground failed to stop the team work when the horses were hitched in the modern big-horse teams as advocated by the extension service of the agricultural college".

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Searing Drouth Slackens Advance Of Borer Toward State

Hot, dry weather of the past summer proved an ally of the Illinois farmer on at least one score, for it gave the European corn borer a setback in the march which the destructive insect is making toward corn fields of this state. This is the report of Dr. W. P. Hayes, entomologist of the Illinois State Natural History Survey. He is in immediate charge of the cooperative experiments on corn borer control which the College of Agriculture, University of Illinois and the Natural History Survey are conducting near Toledo, Ohio.

Had it not been for the unusual weather conditions of the summer, the corn borer situation might now be far more grave than it is, according to Dr. Hayes. Moths of the insect began their flight in June, somewhat earlier than normal. They were present in large numbers and one experienced government observer reported that the flight was the largest he has ever seen.

These large numbers of moths laid twice as many eggs on the Illinois experimental corn plots near Toledo as were deposited last year on the same number of hills. Because of the weather conditions, however, the corn leaves curled up and exposed many of these egg masses to the direct rays of the sun. Consequently many of the eggs dried up and failed to hatch or were loosened and blown from the plants.

This thinning of the corn borer's ranks left a spotted infestation, Dr. Hayes reported. In some counties of the infested area surrounding Lake Erie, borer damage will be less than last year, while in others it will be heavier.

There has been some spread of the insect, in spite of the hot, dry weather, although not as much as might otherwise have been the case. Early reports from the summer scouting for new infestations revealed that several new townships in Michigan, Ohio and Indiana have been added to the infested area. A summary of conditions later in the season is expected to give some indication of what can be expected of the borer in the drier regions of the corn belt.

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Illinois Farmers Now Do Accounting Ahead Of Other Jobs

Illinois farmers who used to do scanty bookkeeping by lamp light in odd moments now stop everything else until the "brain work" is done. At least, 2,456 who are enrolled in the farm accounting service of the College of Agriculture, University of Illinois, cheerfully stopped their teams and tractors long enough during the past summer to go over their accounts with representatives of the college farm organization and management department.

The accounting service is now rounding its fifteenth year and never was there better interest nor more hearty cooperation on the part of the farmers who are enrolled in it, according to a report by R. R. Hudelson, extension specialist in farm organization and management. The college representatives made the 2,456 farm visits in 175 days, which is an average of 14 farms a day. Often as many as 20 farmers a day were visited between early morning and late evening.

The big majority of those enrolled in the project showed by action as well as by work that they find a suitable accounting service a real help in managing the modern business of farming, Hudelson reported. Many of them have been using the accounting service for several years and showed by their attitude that they look forward to the annual visit when a college representative familiar with a large number of similar farms brings a complete summary of the past year's business with facts to show the relative efficiency of the individual business in all of its phases. The reports which were taken back to the farmers on their past year's business were prepared with a view to telling the story definitely, quickly and in permanent form.

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Millions Await Farmer When Cream Quality Sets Price

Millions more for farm relief could be directed into the pockets of farmers without the necessity of governmental action if the practice of buying cream on a quality basis were adopted by the butter industry, according to C. A. Brown, associate in dairy economy at the College of Agriculture, University of Illinois.

"Butterfat prices to the farmer undoubtedly could be raised approximately two cents or more a pound if the quality of cream were improved enough so that all butter manufactured from it would rate a score of 90, instead of around 88, as is often the case. This alone would add millions to the returns of cream producers. Other millions would be added with improvement in quality by reason of the fact that the consumption of butter substitutes, particularly margarine, would be reduced and there would be a consequent increase in the use of butter.

"A very large portion of the cream produced in the corn belt is not of sufficient quality to produce butter better than 87 score. This is a poorer grade of cream than that produced in most dairy states. Butterfat prices in the corn belt are relatively low primarily as a result of such a deplorable condition. Undoubtedly poor quality of cream is practically altogether responsible for this condition, since it is evident that corn belt states are not at a disadvantage from the standpoint of distance from market and competition among cream buyers.

"The solution to the problem of cream improvement lies chiefly in a cream grading plan whereby cream will be purchased on the basis of quality. There are different methods of grading cream, the most scientific being to grade on the basis by which butter is sold, namely, taste and flavor. This method, however, is considered rather impractical under present conditions. Fortunately, it is practical to grade on the basis of acidity and age of the cream. In one of the northwestern states where cream grading is required by law, all cream is bought primarily on the basis of acidity. A spread of several cents exists between the different grades as indicated chiefly by the acidity test.

"Parts of the states of Indiana and Kentucky and the entire state of Tennessee now pay for cream on the basis of age. A premium is paid for cream not more than four days old.

"The acidity and four-day plans are practical in that they may be employed with but little difficulty by the present staff of cream station operators and consequently do not materially increase procurement costs. This is particularly true in respect to the four-day plan.

"Just as cream producers are the principal losers under the present one-price system of cream buying, they would be the principal beneficiaries under a grading plan whereby cream would be purchased on the basis of quality".

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Printed in furtherance of the Agricultural Extension Act approved by Congress May 8, 1914. H. W. MUMFORD, *Director*.

Shipping Grain Direct Is Best Plan Under New Rates

To get the most out of the drouth-emergency freight rates now applying on grain going to certain sections of the country, Illinois elevators and farmers should use the plan of direct shipment, according to a notice just sent to elevators of the state by Dean and Director H. W. Mumford, of the College of Agriculture, University of Illinois and a member of the state drouth relief committee.

The plan is outlined in a recent circular issued by the college under the title of, "Business Procedure in Shipping Grain Direct from Producing to Consuming Sections". While the direct shipment method was not designed with special reference to the emergency freight rates, it so happens that it is "made to order" for use in connection with those rates, it was pointed out by L. F. Rickey, associate in grain marketing technology and author of the circular.

Most of the advantage of the emergency rates would be lost to farmers around Centralia, for instance, unless they used the direct shipment plan instead of buying through the terminal market at St. Louis, Dean Mumford explained. It is true that the proportional rate, which is the rate on grain originating west of the Mississippi river, is only 6.5 cents a hundred pounds from St. Louis, Mo., to Centralia. However, the emergency rates do not apply on proportional billings. The local rate, which is 12 cents a hundred pounds from St. Louis to Centralia, would be the only one on which the emergency provision would apply. Hence, grain from St. Louis to Centralia would pay six cents a hundred pounds under the emergency rate, or one-half the local rate. Furthermore, the price of grain on the St. Louis terminal market would be the farm price of it at its point of origin plus the freight cost of getting it into St. Louis.

On the other hand, under the emergency provisions, farmers buying direct can get the cheaper grain available at Bloomington, for instance, and ship it to Centralia for half of the regular rate or 7½ cents a hundred pounds.

As an aid to farmers in sections which are short of feed, the college is compiling a list of elevators which have grains of different kinds for direct shipment.

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Farm Price Probe Recalls Day When Corn Was 20 Cents

Present farm prices, although the lowest since 1913, probably would have seemed "sky high" to the farmers of 1849 when eggs were a nickel a dozen and corn could be had for 20 cents a bushel. These prices and others since that time have been recorded and analyzed in a new bulletin, "Prices of Illinois Farm Products From 1866 to 1929", which has just been released by the College of Agriculture, University of Illinois.

Yearly averages of prices, the character of fluctuations, and changes in production as a result of those fluctuations are given from 1866 to 1929 for each of 16 important farm products including corn, wheat, oats, rye, barley, hay, potatoes, apples, butter, eggs, chickens, hogs, cattle, veal calves, sheep and horses. There also is a compilation of the few prices of farm products which could be found for years prior to 1866. L. J. Norton, assistant chief in agricultural economics, and B. B. Wilson, formerly research assistant in agricultural economics, made the study and wrote the bulletin. Only by studying the past can an understanding be obtained of the general economic forces that will govern price movements of the future, the authors point out.

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Direct Buying Of Grain Is A Money Saver For Farmer

Distinct savings in freight and terminal charges could be made by grain-buying farmers if they would have grain shipped direct to them from the surplus-producing areas instead of purchasing it through the great terminal points, as is now done, according to a new circular, "Business Procedure in Shipping Grain Direct From Producing to Consuming Centers", which has just been released by the College of Agriculture, University of Illinois. A case is cited to show that farmers in Scales Mound, a northern Illinois dairy community into which much grain is shipped, could save $104 on an 80,000-pound car of grain by buying it direct from Masonville, Ia., instead of having it go to Chicago first and then shipped back to them.

L. F. Rickey, associate in grain marketing technology and the author of the circular, takes up the importance of mutual confidence in direct shipments, agents suited to handle such shipments, the purchase contract, the need of specifying the weight of grain desired, indicating the kind of grain, freight charges and routing, establishing the grade of the grain, time between acceptance of contract and shipment, setting the price, the bank deposit, method of payment, accurate weighing, loading and examination of the car. The circular shows samples of forms needed in executing direct shipments of grain and gives a list of grain inspection offices of interest to Illinois shippers.

"Most of the grain sold from the area in which it is produced goes through he great terminal grain markets. Manifestly, if feeding requirements can be filled y buying direct from the producing section, there is a distinct saving to be made n freight charges. Similarly, there are places in southern Illinois and in eighboring states to the east and south where feeding requirements exceed the amount f grain produced locally and to which grain may be economically brought direct from he surplus-producing area of east-central Illinois."

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Paleness Of Celery Is Secret Of Its Pleasant Taste

If celery didn't have that pale, blanched look about it, it wouldn't be he tasty salad crop that it is, L. H. Strubinger, of the olericulture division, ollege of Agriculture, University of Illinois, points out. The plant would have a trong, acrid flavor if the green coloring matter were not driven from the stems and eaves of the plant by a process known as blanching, he explained.

"There are several ways of doing the blanching. For the easy, or self-lanching varieties, this may be done successfully by putting boards on each side of he row. Such boards should be at least 12 inches wide and may be of any length. hey should be placed just as close to each side of the row as they can and are ommonly held in place by stakes driven on the outside to keep out just as much light s possible. A specially prepared paper, quite similar to roofing paper, often is ubstituted for the boards. It is much less bulky and can be sorted more easily for se in successive seasons. This paper commonly is held in place by wire arches. hese arches must be placed at four- or five-foot intervals to be the most successful.

"Another means of blanching often used is to bank both sides of the row with oil. Great care must be taken to keep the soil from getting into the inner parts of he plant or rots are likely to occur. This method of blanching can not be used for he early crops of celery because the high temperature of the soil, together with the oisture content, would be very conducive to the development of rots.

"When only a few plants are grown they may be blanched by wrapping each one in aper. Another method of blanching that may be used is to turn a tile over each plant o as to exclude the light".

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Heavy Steers To Be Even Less Popular In Next Few Years

Changing styles in the beef trade will see the heavier types of grain-fed steers losing even more of their slipping popularity during the next few years, it is predicted by Sleeter Bull, in charge of the meats division at the College of Agriculture, University of Illinois.

The present trend toward marketing grain-fed cattle of good quality at younger ages than was the case several decades or even several years ago will continue during the next few years, he believes. The proportion of aged cattle, two years old and older, will decrease and the proportion of calves and yearlings, increase. However, the choice, or prime two-year-old steer weighing 1,400 to 1,500 pounds is not likely to become extinct as has the 2,000-pound steer of a generation ago.

"From the producers' standpoint the younger cattle are more economical because they put on their gains considerably cheaper than do aged cattle, their increase in weight being high in water and low in fat. Also finished calves or yearlings may be held for an anticipated rise in the market much more satisfactorily than finished aged steers.

"From the consumers' standpoint the younger animals are more desirable because their carcasses cut out smaller steaks and roasts which more nearly fit the purse and the oven of the housewife, have little or no waste fat on the cuts even when finished and supply tender meat. Most consumers judge beef largely by its leanness and tenderness; hence the lack of flavor in baby beef is not objectionable except to a few connoisseurs. There are enough of these connoisseurs, however, to supply a constant, if small, demand for mature beef of quality, and a certain amount of such beef always is in demand by the high-class hotels, restaurants and clubs, and the dining car and steamship trade. If there is any surplus of such beef over this limited demand it must go into the retail trade, usually at a sharp discount.

"Feeding of so-called baby beeves is less hazardous than fattening older cattle. Owing to the high cost of production and the fact that finished mature steers may be held in the feedlot for only a short time, a slight overproduction of such cattle usually results in disastrous price declines. In the case of calves and yearlings any surplus in the retail trade goes into competition with mature beef for the hotel trade. Finished calves or yearlings also may be held for a better market much more economically than mature cattle. Thus a decline in their price is not likely to be as great nor to last as long as a decline in the price of aged steers. In any event, because of lower feed costs such a decline is not so disastrous to the producer as a decline in prices of mature beef.

"In spite of the cheaper production costs the price of baby beef is frequently as high or higher than that of mature beef of the same quality. This situation is explained by the wider demand for baby beef and the frequent oversupply of heavy steers. Until feeders appreciate this situation and reduce the number of heavy steers of choice and prime grades this price relationship is likely to continue."

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Livestock Pools To Close Sales Of Fifty Millions

Between 40 and 50 million dollars worth of business handled annually by about 400 cooperative livestock shipping associations in Illinois will be reviewed in annual meetings which these associations will have well under way between now and the end of November, according to R. C. Ashby, associate chief in livestock marketing at the College of Agriculture, University of Illinois. To have a live and interesting meeting, many associations find a live and interesting program desirable, he pointed out. Such a program seldom "just happens". Usually it has to be planned. Eight weeks in advance is none too soon to start, he said.

"Requirements for the annual meeting vary with localities and with associations. There should always be a mimeographed or printed report of the past year's business for distribution to the membership. It should be brief, but definite and snappy. Some sort of a 'feed' puts across many a meeting. It need not be an expensive one; often a cup of good coffee and one or two good sandwiches serve the purpose admirably.

"Problems of the association should, of course, be put before the annual meeting. One good plan is to select as many association members or directors as there are specific questions and then assign each one a topic for a five-minute discussion in the meeting. This is one means of developing local talent, the thing every association should be doing. Finally there should be one talk or discussion which links up the local association with the general livestock marketing program. This should be a forward-looking presentation but one with an understanding of the real problems involved. Most important of all, however, is to assign every officer and every director some definite connection with and responsibility for the annual meeting. The annual meeting should stimulate the membership to more active participation in the association's business. The way to stage that kind of a meeting is to plan for it far enough in advance."

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$25 For Terraces Reclaim Ten Acres Neighbors Gave Up

Although a neighbor advised that the field be abandoned as worthless, William L. Wade, a Clinton county farmer living near Greenville, reclaimed ten acres of his farm by terracing it at a cost of less than $25, according to a report by E. G. Johnson, farm mechanics extension specialist of the College of Agriculture, University of Illinois. Erosion and gullying, which had ruined the field, are the most serious problems on many Illinois farms, there being about five and a half million acres of land in the state subject to them, Johnson pointed out.

This year, after terraces had stopped the gullies, Wade was able to harvest a crop from the entire field for the first time in the 12 or 13 years it had been in cultivation. It made 25 bushels of wheat to the acre and the crop was harvested without having to make an extra turn with the binder.

It was four years ago that the neighbor advised Wade that he might as well make up his mind to abondon the ten-acre field. However, he continued to farm it in spite of the fact that the gullies made the harvesting of a crop almost an impossibility. Finally, last fall Wade called in W. A. Cope, the farm adviser of the county, and asked his advice about the field. It was decided that terracing was the only hope. A drainage level was borrowed from the county engineer and the terraces staked out by Farm Adviser Cope. Wade built the terraces in two days' time with a two-horse team and plow and a two-horse team and small road grader. The total cost for everything, including labor, was $25.

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Big Apples Of Highest Color Will Keep Best In Storage

The bigger and more highly colored apples are, the longer they will keep, it has been discovered by horticulturists. Hence, apples, like the eggs in the old proverb, should not all be put in the same basket, as most farmers do when they are storing the fruit for winter, says R. L. McMunn, of the pomology division, College of Agriculture, University of Illinois. By sorting fruits of a single variety into four lots on the basis of size and color it is possible to extend the range of that variety over a longer period than would normally be the case if the fruits were stored without any division, he explained.

"Apples for storage should, of course, be selected on the basis of soundness. Otherwise, the injured fruits will become infested with diseases and will then be a source of infection for the sound fruits.

"The sound fruits should be separated into two lots, those that are well colored and those that are not well colored. The reason is that the well colored specimens have developed to a greater extent the wax coating on the skin and will, therefore, keep much longer than green specimens in which this waxy coating has not developed. The better colored specimens not only will keep longer than the others but also they will have a better flavor and will retain this flavor over a much longer period.

"The range of the variety can be still further extended by separating the well colored and the poorer colored fruits into large and small sizes. Large, well colored fruits will keep longer than the small, well colored fruits. Likewise, the large, poorly colored fruits will keep longer than the small, poorly colored ones.

"After the apples have been divided into lots, it is well to wrap each one in wrapping paper or newspaper. Better yet are the oil wrappers used by all commercial growers on varieties which are very susceptible to scald. For proper keeping, apples should be stored at a temperature close to 32 degrees Fahrenheit in a room that has a rather high humidity. In basements with concrete floors it is well to sprinkle the floors every few days to keep the humidity high enough so that the apples will not shrivel. It is always well to inspect the fruit at frequent intervals and remove any that is showing signs of rotting."

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Pork Chops Made Six Weeks Sooner With Modern Methods

Modern methods of growing and fattening hogs, as demonstrated this past summer by 458 Illinois farmers, have taken more than six weeks off the time required to get pigs up to a marketable weight of 200 pounds each, according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. Farmers using the better methods can thus get their hogs on an earlier market which usually is higher and more profitable than those of later months, he explained.

The 458 farmers are those enrolled in the college's statewide extension project on balancing corn for hogs. As advocated in the project, the cooperators practiced swine sanitation and in addition fed their brood sows, pigs, and fattening hogs such combinations of corn and other grain with such a selction of legume pasture, rape pasture, alfalfa hay, skimmilk, soybeans, tankage, linseed oil meal, limestone, bone meal and salt as was calculated to give maximum profit under their individual conditions. Many of the 458 farmers had fattened and sold their spring pigs by the middle of September. It took them about six months or less to get an average weight of 200 pounds on their pigs when they followed the college's recommendations.

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Farmers In Upper Illinois Have Seed Corn Advantage

Farmers in central and northern Illinois will have no shortage of seed corn for next spring's planting, although the southern part of the country's corn belt will be hard hit as a result of the past season's drought, according to J. C. Hackleman, crops extension specialist of the College of Agriculture, University of Illinois.

Any extra seed which farmers in the central and northern part of the state pick this fall should find a ready market in the stricken area to the south, he pointed out.

Regardless of whether or not farmers expect to market any surplus, there is another reason why they should pick their seed corn now, Hackleman pointed out. Seed corn is always best when it is selected just as soon as possible after it is practically mature, he explained.

"Cooperative demonstration work which the college has carried on with Illinois farmers shows that seed corn which was field-picked as soon as it was well matured and then dried out rapidly had six times as many disease-free ears as did seed corn which was left in the field until harvest time and then picked out as the husked corn was dumped in the crib. Badly diseased ears were almost two and a half times as numerous in the dump-picked seed corn as they were in field-picked ears.

"This is the result of the fact that the disease organisms remain active during the late period of ripening and therefore the spread of the disease in the ears is certain to continue until the moisture content of the corn gets below 20 per cent. This means that most corn, especially with rains and relatively high humidity in the fall, will be in ideal condition for the optimum spread of the diseases which are in the fields and which already have infected a relatively high percentage of the ears.

"The farmer who is expecting to disease-test his seed corn can not afford to neglect field-picking. He should pick four or five times as many ears as he expects to need. This will enable him to cull rigidly and thus insure himself a higher quality of seed corn next spring. The farmer who does not expect to disease-test his seed is in even a more serious situation. Field-picking will be worth more to him than to any one else.

"The important thing in the storage of seed corn is to dry it out quickly to stop the spread of diseases in the ears and prevent damage from freezing. Fire drying is not absolutely necessary provided the corn is not piled. It should be placed on racks around which the air can circulate and the racks should be so arranged that every portion of the room is well ventilated. If there is any question as to air pockets or portions of the room in which the air is likely to become stagnant and thus cause the corn to mould, an electric fan or some form of forced ventilation must be provided.

"Seed corn should not be exposed to freezing temperatures until after the moisture content has been reduced to 15 per cent or less."

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Printed in furtherance of the Agricultural Extension Act approved by Congress May 8, 1914. H. W. Mumford, *Director*.

Corn Borer Still A Menace Despite Setback In 1930

Despite the fact that the corn borer did not make a normal increase and spread during the unusual season of 1930, it will, unless controlled, become one of the most destructive crop pests ever introduced into America and should be dealt with accordingly through the continued cooperation of the farmer, the scientist, the educator and all state and federal administrative officials, according to a report by a joint committee appointed by five national agricultural societies.

Dr. W. L. Burlison, head of the agronomy department, and A. L. Young, a member of the farm mechanics department, College of Agriculture, University of Illinois, are members of the committee. It was appointed by the American Association of Economic Entomologists, American Society of Agronomy, American Society of Agricultural Engineers, American Farm Economic Association and American Society of Animal Production.

The committee's recommendations and suggestions, "after careful investigation of the regulatory, research and educational activities", were:

1. That the quarantine regulations of the federal governments of the United States and Canada, as well as of the state and provincial governments, be supported and encouraged by all agencies and individuals interested in the welfare of American agriculture.
2. That the extension agencies of the federal governments of the United States and Canada and of the state and provincial agricultural colleges, strengthen and coordinate their programs of education relating to the corn borer, extending these to conform with the spread and abundance of the insect and with the increased knowledge gained through research.
3. The following studies should be stressed because of their particular importance: (a) the expedition of parasite introductions and the development of artificial media for mass production of parasites, (b) the development of effective insectides and their efficient application, (c) evaluation of the effect of environmental factors on the insect's activity.
4. Experiments clearly point to the probable development by breeding of high yielding resistant and tolerant varieties of corn which should be an important factor in control. To promote the development of such varieties, the corn breeding programs of the state and federal governments should be continued and strengthened.
5. Research with farm implements should include the further development of plows and plow attachments and attachments which can be applied to the equipment already on the farm; also a further study of pickers with stalk handling attachments, rakes and other stalk handling equipment.
6. It is important that the relation of corn borer control practices to the entire farm business be determined and recommendations made for specific conditions. Proposals including changes in cropping systems, complete utilization of corn, substitute crops, changes in corn acreages and labor and equipment costs should be worked out in line with the objective of maximum returns from farming.
7. Continued and further studies should be made on the influence of different degrees of corn borer abundance upon: (a) feeding value of corn and the corn plant in different forms, (b) upon the yield of feed nutrients an acre, (c) the comparative feeding value due to different methods of harvesting and preparing corn, (d) use and feeding value of substitute crops and (e) the influence of the corn borer and resultant control measures upon the cost of production and the quality of livestock products.

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U. Of I. Again Issues Valuable Results In Record Time

Valued at an inestimable amount, the results of research and experimentation carried on during the past year in the interests of better farming and homemaking today were placed in the hands of Illinois farmers and homemakers and other interested citizens by the experiment station of the College of Agriculture, University of Illinois.

This is the fifth consecutive year that the Illinois institution has led all other state experiment stations in getting the results of its research work back to the persons for whom they were intended.

The results are compacted in the annual report of Director H. W. Mumford for the year ended June 30. Issued under the title, "A Year's Progress in Solving Farm Problems of Illinois", the report is the forty-third in the station's history.

The new plan of getting the station's results back to the farmers and homemakers and other citizens of the state was inaugurated seven years ago by Director Mumford. For the past five of those seven years, the national record for speed in getting such reports into the hands of persons who can use the facts has been held by the Illinois station. The volume was compiled and edited by F. J. Keilholz, extension editor of the college and experiment station, from reports submitted by members of the station staff.

The range of subjects reported upon in the 296 pages of the current volume extends from such subjects as the relations between business men and farmers to the merits of simple, fadless diets in reducing weight. Between these two limits are reported many new facts on farm organizations, soils and crops, animal husbandry, dairying, entomology, farm organization and management, agricultural economics, farm mechanics, horticulture and home economics.

"At no time has the experiment station striven for volume in work attempted or results accomplished", Director Mumford points out in his report. "It is not so important that the station shall speak on every agricultural subject that occupies the public mind, but it is highly essential that when it speaks, it shall speak with authority.

"What these and similar results of the experiment station mean in economic and social values to the people of Illinois, the nation and the world at large is inestimable. Facts developed by the Illinois Agricultural Experiment Station do, indeed, constitute a significant contribution to agricultural knowledge, for they go to every corner of the globe - from the Danish arctic laboratory on the coast of Greenland to Cape Town on the south point of Africa, from Constantinople in the East to the Leeward Islands in Polynesia. They go to the great libraries of Europe and Asia as well as to those of the American continent and to colleges in India, Egypt, Palestine, and Syria."

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Early Plowing Will Halt Damage By Serious Corn Pest

It has now been established after a three years' study that the grape colaspis, one of the insects causing more or less severe damage every year to Illinois corn, can be kept in check by plowing corn land in the fall or early spring, preferably in the fall, J. H. Bigger, assistant entomologist of the Illinois State Natural History Survey, has reported to the College of Agriculture, University of Illinois.

It was discovered in the study that the loss from the insect is never severe except where red clover land is plowed late in the spring and corn is planted immediately, Bigger reported. Plowing in the fall or early spring not only controls the insect but also increases both the yield and quality of the corn crop, according to the records of the study.

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Iron Of Mineral Mixtures Worthless In General Feeding

Iron, another common constituent of complex mineral mixtures urged upon farmers for balancing livestock rations, has been shown by experiments in Illinois and other states to be entirely worthless in general livestock feeding, according to Dr. H. H. Mitchell, chief in animal nutrition at the College of Agriculture, University of Illinois. The main use of iron on the farm is still for making farm tools and machinery and not for balancing farm rations, he said.

The recently revived interest in blood formation and anemia and their relation to the supply of iron in the food has led to an exaggerated idea of the importance of iron salts in livestock feeding, Dr. Mitchell said.

At the present time the only known legitimate use of iron salts in livestock rations is in the treatment of nutritional anemia, a disease traceable solely to strict milk feeding under unnatural conditions of management, Dr. Mitchell explained. At that, he added, the only well-known instance of nutritional anemia among farm animals in this part of the world is the anemia of suckling pigs confined indoors for several weeks after farrowing. At the College of Agriculture, University of Illinois, a practicable and effective method has been worked out for giving iron salts to the pigs from birth until all danger of anemia is past, he reported.

"However, this proven value of iron salts does not justify their use in complex mineral mixtures, although they are found in many such mixtures on the market. Furthermore, the form of iron quite generally used in such mixtures is perhaps the least available form that could be chosen, namely, iron oxide. There is every reason to believe that it is quite unusable by animals, while actual tests have shown that anemic pigs are not appreciably benefited by relatively large doses of iron oxide, although they respond readily to soluble iron salts.

"Experiments here in Illinois have shown that iron salts added to the well-balanced rations of growing and fattening pigs over 40 pounds in weight do not improve the gains. In fact, particularly if the ration contains an iron-rich food like tankage, there seems to be some tendency towards an unfavorable effect. Experiments at the University of Wisconsin likewise have shown that the growth of chicks is not improved by iron supplements.

"The complex mineral mixture, whether mixed at home according to some treasured formula or bought from a high-pressure salesman, is a 'shot-gun' prescription for ills that may or may not exist. Such a mixture is more expensive than it needs to be, it may injure livestock consuming it freely and it discourages the home-making of minerals by giving the impression that mineral mixing is a fine art. As a matter of fact, a mixture of two or three common minerals, such as limestone, bonemeal and salt, is just as good or better and is much cheaper."

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Fall Peach Spray Will Insure Good Prospects For 1931

Illinois peach trees withstood the drouth in surprising fashion, and growers can insure themselves good prospects for a 1931 crop by applying dormant sprays this fall, it is reported by R. S. Marsh, horticulture extension specialist of the College of Agriculture, University of Illinois.

Fall spraying eliminates the risk of being delayed by wet weather next spring, Marsh pointed out. Also a fall dormant spray is recommended in preference to an early spring dormant spray to control effectively peach leaf curl and San Jose scale, he pointed out. Although the low temperatures of the 1929-30 winter killed a high percentage of the scale insects, this past summer has been ideal for a rapid increase in the numbers of this pest. Also the dry spring and summer greatly reduced disease organisms, but wet and cloudy weather can make certain diseases a menace in a very short time.

"Although the hot, dry, summer weather seriously damaged most crops in southern Illinois, it seemed to be ideal for peach trees. Throughout the state they generally are in much better condition than anyone anticipated, considering the abnormal weather. Where trees were pruned, nitrated and cultivated they have made much recovery from their winter-injured condition and have appeared vigorous throughout the summer drouth.

"Dormant sprays can be applied effectively as soon as enough of the leaves have fallen to allow for thorough spraying. For fall dormant sprays, the grower has a choice of sprays using either lime sulphur or an oil bordeaux. The latter is more effective in the control of San Jose scale. Detailed directions for making these sprays are contained in Circular No. 277, "Spraying Illinois Fruits", which may be obtained on request from the College of Agriculture, University of Illinois.

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Lamb Feeders Need Wider Margin For Profits This Year

Lamb feeders of Illinois, one of the leading states in this business, will have to figure on more margin between buying and selling price of their lambs if they make a profit this year, it is pointed out by W. G. Kammlade, in charge of sheep husbandry at the College of Agriculture, University of Illinois.

Feed costs are not greatly different from last year and feeding lambs are costing about one-half as much as then, he reported. Feed costs and other costs, excepting buying price, remaining the same, it is necessary to have a much larger margin when lambs are bought at a low price than when they are bought at a high price, he explained.

"It is possible, for example, to buy feeding lambs at 12 cents a pound and sell them at 12 cents a pound and make some profit, on the basis of a pound of gain costing about eight cents for feed. However, a feeder would not make any larger profit buying feeding lambs at six cents a pound and selling them for eight cents when his gains cost him eight cents a pound. The selling price needs to be above feed costs as well as above buying costs if profits are to be significantly larger.

"At present prices, grain rations on farms this season will cost about one to one and a half cents a pound and roughage rations about three-fourths to one cent a pound. This means that the cost of feed for a pound of gain in the case of most feeders will be eight to nine cents. Thus, a selling price of $10 a hundred pounds, judging from present prices of feeder lambs, would allow enough margin above feed cost and also enough above buying cost to enable the feeder to have some profit from his operations".

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Feed Shortage Can Be Blocked By Planning Substitutes

Illinois farmers will be up against it both for hay and pasture in 1931, as a result of the past season's drouth, but the emergency can be met by careful planning, says H. C. M. Case, head of the farm organization and management department of the College of Agriculture, University of Illinois. In the study of many hundreds of farm records, examples have been found where men in such situations have used a wide variety of substitute crops and thus avoided breaking up a rotation and hurting their profits, he said.

"Recently many Illinois farmers have adopted good field arrangements and rotations of crops which fit into their plan of business. Weather conditions of the past year, however, have been discouraging to the man who is trying to follow a good rotation. In many parts of the state, clover fields have been killed by the dry weather. Such conditions have led some farmers to give up a good cropping system after they once had it established. It is easy to put land which should have been in clover back to corn, following a year when the clover crop has failed, and to break up the rotation in that way.

"A good system of farming should include plans for handling such a situation. Careful consideration should be given to selecting emergency hay crops such as soybeans or emergency pasture crops which in general had best be a companion crop of small grain and legumes. Grain crops perhaps supplemented by rape give early feed in the spring and will be needed with the short supply of feed that will be on hand. Spring-sown legumes and sudan grass may give good summer and fall feed. Pasture land may be divided, using part for spring pasture and part for fall pasture. In such an arrangement some crops will provide early pasture, while others will provide later pasture.

"No matter what has to be done to keep a good cropping plan going, it should be remembered that such a plan has helped many Illinois farmers increase their earnings by making it more economical for them to operate their farms and at the same time supplying them with needed feed. A good cropping plan helps provide for the best use of labor, power and equipment, helps to maintain fertility of the soil, provides for the proper feeding of livestock and makes it easier to control weeds, insects and crop diseases".

-M-

Correct Feeding Nets Association Members $19 A Month

An average of $19.60 has been added to the monthly profits of members of the McDonough County Dairy Herd Improvement Association who have abandoned haphazard methods and are feeding their cows on the basis of what they produce, according to a report to the College of Agriculture, University of Illinois, which sponsors these associations.

The improved feeding methods have taken seven cents off the cost of producing a pound of butterfat and have boosted the profits of the dairymen by that amount, according to Ernest Rose, tester in the association, who made the report.

Owners of the high producing herds in the association also are feeding silage and hay and balanced grain rations so that their herds will produce at a profitable level during the winter feeding season.

Profit-making suggestions and results similar to those from McDonough county are available to approximately 1,500 Illinois dairymen who are members of dairy herd improvement associations now operating throughout the state, according to J. H. Brock, assistant in dairy extension at the agricultural college.

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Drouth-Hit Feed May Be Conserved With Good Shelter

With their feed supplies cut short by one of the worst drouths in years, Illinois farmers can conserve what they do have by seeing that their grain, roughage and livestock is properly sheltered for the winter, according to W. A. Foster of the farm mechanics department, College of Agriculture, University of Illinois. Shelter for the grain and roughage keeps it in a palatable condition and prevents spoilage and waste from mold, he pointed out. Shelter for livestock conserves feed by saving the animals' body heat, thus making them more comfortable and contented.

"Every feeder dreads the cold winter rain, damp clothes and chilling wind if he knows that the unsheltered livestock must suffer. More grain and roughage will be consumed and much wasted, while the gains of the cattle will be slowed up.

"An open shed with bunks makes an ideal place for feeding, since the stock will seek shelter from the cold rain, wet snows, and wintry blasts if given a chance. The manure accumulates there and is saved rather than being wasted over a large area. These shelters which can be open to the south or southeast are built 16 to 20 feet wide and in any convenient length. The shed or combination roof is used. One may easily drive between posts with a spreader for the removal of the manure. Only a limited amount of materials is used. The construction is very simple and can be put up with farm labor.

"The old barn or shelter may be made serviceable, convenient and comfortable at a small outlay of time and from salvage materials. A careful inspection of the roof and a little repair will put it in good condition.

"An inexpensive shelter can be made from poles and branches cut from the wood lot and covered with straw or corn stalks."

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Orchard Sanitation Will Give Insects Further Setback

Having gained their fight against insects and diseases during the past summer, fruit growers can begin now to bolster their 1931 profits by practicing simple orchard sanitation, according to R. S. Marsh, horticultural extension specialist of the College of Agriculture, University of Illinois. Aided by careful spraying and the dry clear weather of the past summer, many fruit growers have reduced the insects and diseases in their orchards to a minimum, Marsh said.

Removal of diseased and infested trees in case they can not be profitably redeemed is one orchard sanitation which Marsh recommends. A light discing of the orchard soil will help in the cleanup campaign, if the soil is not subject to erosion, he added. It is recommended that this discing be done in late October or early November so that no second growth is encouraged to break the rest period of the trees. Such cultivation will assist in the control of scab and leaf spot diseases as well as destroy the over wintering quarters of many insects which may be hibernating in the soil. Also a late cultivation if done around the base of the tree will go far toward the control of mice injury, Marsh said.

-M-

Water, Not Drouth, Was The Big Threat To This Corn

Dry weather ruined the corn crop for many a farmer this year, but Ernie Michael, a Carroll county farmer living near Lanark, almost lost his because of a heavy rain. A system of terraces which he had built to prevent washing and gullying on the field was all that saved the crop, according to a report which he has made to E. G. Johnson, farm mechanics extension specialist of the College of Agriculture, University of Illinois.

Just after Michael had cultivated the corn on a ten-acre field for the second time, there was a 4-inch rain, most of it coming in a very short time. "It rained so hard", Michael said, "the water even came down the chimney and leaked into the house." Two or three years ago, before the field was terraced, a similar rain was so damaging that the water came down the corn rows in rivulets and washed small gullies nine or ten inches deep over the entire field.

"It's hard to say how much terracing has been worth to this field, but it is worth considerable," said Michael. "The corn in a near-by unterraced field has yellow strips running through it showing where washing has taken place, while the corn in the terraced field is all the same color. This is a demonstration that terraces are helpful in increasing yields on soil that is washy." The terraces caused no trouble in preparing, planting or cultivating the field. Michael reported surprise that he was able to get such a good check on his corn.

The terraces, which are designed to slow up the flow of surface water, thereby allowing more of it to be absorbed and preventing it from gaining enough speed to wash the soil, were built with the assistance of Farm Adviser M. P. Roske of Carroll county. He staked out the terraces which were then built by Michael himself. A small patrol grader and horses were used in building them. The soil was in very poor condition to handle last spring and the terraces were not built as high as wanted. Nevertheless, they held up under the 4-inch rain which came after the second corn cultivation and another good rain which fell later. Michael is now making plans to terrace another and larger field this fall. Many other farmers in the state, once having seen the value of terracing in preventing soil washing, also have terraced more land, Johnson said.

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Premiums On Early Lambs Encourages Their Production

More Illinois sheep flock owners next season will practice the recommended plan of raising early lambs, after having seen the tidy premiums which they paid this year, in the opinion of E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois.

Last spring a few early Illinois lambs were sold as high as $17 a hundredweight or more and thousands were marketed at around $12. At the time, owners were disappointed because prices were lower than they had been the previous year. However, they are better satisfied with those prices now, in view of the figures at which later lambs have been selling. Late lambs kept all summer brought only about $9 a hundredweight. These late lambs grew scarcely any during July and August when it was hot and consequently they have been expensive to raise.

This experience has encouraged more farmers to try and raise February and March lambs next year and have them fat and sold before the usual June drop in prices, according to Robbins. Listing the various advantages, he pointed out that early lambs escape injuries from stomach worms, they have less loss from dogs, they suffer no setback from mid-summer heat, and they are quickly turned into cash at a time of year when farm income often is at low ebb. Best of all, he said, they usually bring in more dollars a lamb than later lambs which are kept twice as long.

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Mexican Ranchers Adopt Illinois Plan Of Cheap Power

Famed for the time and money which they are saving Illinois farmers, big-team hitches as now used in this state have spread to far-off Mexico, according to a report by E. T. Robbins, livestock extension specialist, of the College of Agriculture, University of Illinois. Already one Mexican rancher with 1,600 mules as a source of farm-produced power is using the Illinois big-team-hitch idea to good advantage, Robbins said.

Having heard of the success of the Illinois big teams, the rancher last spring wrote the agricultural college for information as to how he might use his tractor plows with mules. The rancher is H. W. Fieke, assistant field manager of the Compani Del Tlahualilo of Tlahualilo. Robbins gave him some suggestions and also sent the college's circular No. 355 entitled, "Big Teams on Illinois Farms". Recently the rancher sent pictures of eight mules pulling a two-disc tractor plow and twelve mules pulling a four-disc tractor plow. Each outfit has a truck made from the hind gears of a wagon to guide the plow and furnish a seat for the driver. To drive such big teams only two lines are needed on the leaders. The rest of the mules are controlled by buck ropes and tie chains as in Illinois. Fieke wrote that, "it was no trouble at all" to make the plows work well with the mules.

While Mexican ranchers are just beginning to take up the big-team-hitch idea, Illinois farmers are going ahead developing new schemes for big teams hich will enable them to get cheap and effective power. A Morgan county farmer, for instance, has rigged up an ingenious outfit for using a two-wheel, two-bottom tractor plow with six horses. At Robbins' suggestion, this farmer made a light truck out of the frame and wheels of a discarded riding cultivator. This man reports that the outfit is strong, steady and well-suited to a six-horse team, itched three and three and driven with two lines.

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U. Of I. To Hold First Hatchery School November 20, 21

Baby chick hatcheries of Illinois, of which there are about 500, are o be given a new service from the College of Agriculture, University of Illinois, in he form of a hatchery school. The event, the first of its kind in the state, will be eld November 20 and 21, it was announced today by H. H. Alp, poultry extension pecialist. Newer developments in the hatchery business, including flock improvement ork, hatchery sanitation and hygiene, and the feeding and care of poultry as it pplies to hatcheries will be stressed on the program. A number of outside speakers nd prominent authorities connected with the hatchery industry of the country will e scheduled on the program.

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Tests Show Way To Grow Much-Desired Early Gladioli

Early flowering of gladioli, a much-sought result in the commercial rowing of this flower under glass, can be brought about both by the use of artificil light and certain chemicals, but as yet neither of these practices can be recomended for regular commercial use, according to experiments conducted over a period f several years by the division of floriculture of the College of Agriculture, niversity of Illinois. Results of the experiments are reported in a new bulletin ntitled, "Experiments in Forcing Gladioli", which has just been published by the nstitution. F. F. Weinard, associate chief in floricultural physiology, and S. W. ecker, associate in floriculture, are authors of the new bulletin.

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Machine Picking Of 1930 Corn To Cost More A Bushel

Mechanical corn pickers, a comparatively new harvesting invention, will show a higher cost a bushel for harvesting corn this year than was the case in 1928 and 1929, according to results of studies made by the farm management department of the College of Agriculture, University of Illinois. On the other hand, hand huskers are being hired for less money this year than either in 1928 or 1929, it was said.

Corn harvesting costs are influenced by weather conditions, but these are normal this fall. Harvesting costs with mechanical pickers will be high owing to the fact that yield will be low, it was explained by P. R. Johnston, assistant chief of the department. In 1928 and 1929 the corn on 102 farms where one-row pickers were used and studied averaged 43 bushels an acre and on the 64 farms where two-row pickers were used, the average yield was 45 bushels an acre. Average yield in central Illinois will be lower than this in 1930, in which case harvesting costs with mechanical pickers may be expected to be higher.

In 1928 and 1929 the department studied 14 farms using one-row pickers where the corn yields were below 37½ bushels an acre with an average yield of 32½ bushels. On these farms the average cost a bushel for husking the corn with the mechanical pickers was 10 cents. There were 19 farms where the same kind of pickers were used but where the corn yields were above 47½ bushels an acre with an average cost for husking a bushel of corn was 7.4 cents.

The amount of corn husked with one machine also is an important factor in determining the cost a bushel. The acreage husked with each of the one-row pickers was larger on the farms where the yields were higher so that in the first group of farms only 2,800 bushels of corn were husked with each machine, while in the second group each picker husked 5,300 bushels.

In the case of farms using two-row pickers, there were no yields below 37½ bushels, but there were 18 farms where the yield ranged from 37½ bushels to 42½ bushels an acre and on these the cost for husking was 7.1 cents a bushel. There were 20 farms where the yield ranged from 47½ bushels to 57½ bushels an acre. Here the average cost was six cents a bushel. In determining these costs it was not possible to estimate the loss of shelled corn which might well be considered as an item of expense.

In the case of the two-row pickers, the group having the lower yield had the largest acreage a picker, so that the total bushels harvested with each machine was about the same for both groups. This partly explains the variation in cost a bushel between the one-row and two-row machines.

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Cattle Feeding Now Normal Despite Earlier Outlook

Cattle feeding operations are getting under way on Illinois farms under more normal conditions than seemed likely a few months ago, according to R. R. Snapp, associate chief in beef cattle husbandry at the College of Agriculture, University of Illinois. Feed supplies are more normal than it seemed they would be, while prices both of feed and cattle are such that there is little unusual about the beef cattle feeding situation this fall, he said.

"Corn belt feeders as a rule buy their feeding cattle in October and November. At that time there is a lot of rough feed in the way of stubble pasture, meadow aftermath, second growth, and seedling clover and stalk fields. Thin cattle are admirably well-suited for utilizing such roughages and often will make good gains on these forages for from two to four weeks. Care should be taken, however, lest the supply of feed becomes short, causing the cattle to stop gaining or perhaps even losing a little. This is particularly likely to happen where steers are left out in stalk fields after the arrival of cold weather.

"As pastures become short or as stalk fields are picked over, additional feed should be supplied in the form of green corn in the early fall or as shocked corn later in the season. This can be fed by scattering it thinly over the pasture so that all the animals will have easy access to it and none will be likely to eat much more than his share. When this method is used, it is very rare for a steer to overeat and go off feed or for an animal to hang around the hayrack and show no inclination to walk up and get a taste of the new material.

"Cattle that are to stay on the farm several months may well be fed roughage alone for five or six weeks before being given their first feed of corn. Likewise, thin mature steers and cows that are to be put only in good butcher condition will be likely to attain the desired finish on good clover hay and corn silage in a period of 100 to 120 days. Choice fleshy feeders, on the other hand, that are to be made prime in a relatively short period should be started on corn as soon as they reach the farm and be gotten up to a full feed by the end of the second or third week."

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Half An Egg Is A Freak Beyond Even The Best Of Hens

A hen recently was reported to have laid an egg with three yolks, but one thing which no hen has ever done is lay half an egg, it is pointed out by H. H. Alp, poultry extension specialist of the College of Agriculture, University of Illinois. It is a case of a whole egg or none at all and consequently hens and pullets must be fed accordingly, he said. If a hen or pullet is not being fed enough to lay a whole egg, she may and often does go ahead laying at the expense of her body weight, Alp explained.

"The term 'feeding for egg production' has often been too carelessly used. The amateur is apt to take it for granted that the feeding program he is following is satisfactory for the reason that the pullets are laying. The bird laying daily or every other day is performing a task which represents her maximum production and as a result it takes a good bird, well-fed, to stand up under the strain. It may be advisable for some flock owners to check on the gain or loss in weight of the flock by periodic weighing of a few marked birds."

-M-

Homeless Hen Is Pictured As Sad Case Of Wasted Cash

The homeless hen should get a share of the headline along with homeless men men now that winter in close at hand, in the opinion of H. H. Alp, poultry extension specialist in the College of Agriculture, University of Illinois. As a case in point, he cites two flocks out of the many which he has been watching during the past summer.

Both have developed into flocks of fine pullets, but now after all the money which has been spent on them, they face the winter as birds without a home. In spite of the fact that the owners have gone to the expense and trouble of providing a suitable brooder house and equipment and feed for rearing, nothing has been done to provide them with satisfactory quarters for the winter, Alp pointed out. The hen house on each of these farms at the present time is of the narrow type with a few small windows in the south wall, is not more than 14 feet wide and is of a type so often associated with dampness and coldness. To make matters worse, there will be more birds than the houses can accommodate.

"New and expensive houses are not always needed. Many Illinois poultry flock owners could solve their housing problems by remodeling the old building. Those who need information on remodeling can consult their county farm advisers or get the college's circular No. 337, entitled, 'Housing Farm Poultry.'

"It should be remembered that a pullet laying in the fall is laying at an unnatural season of the year. If let alone, she would be content to follow instinct and lay in the spring. Therefore, when she is forced to lay out of season, she should be provided with conditions which are as nearly as possible like those prevailing in the spring. Confining her to a poorly-lighted, poorly-ventilated, dirty and over-crowded house in weather which is normally against her natural instincts for production is far from surrounding her with conditions favorable for egg production. It would be more profitable to well good pullets rather than keep them in a poor house."

-M-

1930 Bad Codling Moth Year; Orchard Cleanup Urged

This has been a bad codling moth year and a strict clean-up of orchards is in order if fruit growers are to keep down next year's damage by this serious pest, according to a report to the College of Agriculture, University of Illinois by S. C. Chandler, assistant entomologist of the Illinois State Natural History Survey. A recent survey of 40 sprayed orchards in the southern end of the state showed an average of 19 percent of the apples wormy, Chandler reported. This means that many worms have found places to cocoon up for the winter ready to produce a brood next spring, he explained.

"Some of these worms have crawled into crevices in the rough part of the tree between the ground and the main crotch. It might be a very paying practice in the case of older, rough trees to scrape off this outer bark, collect and burn it. The trees would then be in shape for the use of codling moth bands next season, which, with the present carryover, may be a valuable supplementary control measure.

"Other worms have chosen various situations on the ground, attaching their cocoons to old prunings, rails, cornstalks, or bits of wood lying around under the tree. Hibernation studies have shown that man-made hiding places such as old baskets, corrugated paper tops, fertilizer sacks and the like contain a very much larger proportion of the worms than the natural cover of grass, leaves and weeds. A clean-up of all such things may help materially in reducing next year's infestation."

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Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

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Losses Of Corn From Disease Could Be Cut In Half

Half of the millions of bushels of corn which diseases are destroying every year in Illinois could be saved and farm profits bolstered accordingly if control methods already developed and known to be effective were applied, according to a new bulletin entitled, "Corn Diseases in Illinois," which the experiment station of the College of Agriculture, University of Illinois released today. The necessary general control measures can be used by any interested farmer whether he is able to distinguish the various diseases or not, the bulletin points out. It is conservatively estimated that diseases annually destroy 20 percent, or one-fifth, of the crop from the 8,700,000 acres of corn grown in Illinois.

Authors of the new bulletin are Benjamin Koehler and James R. Holbert, both widely-recognized authorities on corn diseases. The former is assistant chief in crop pathology at the College of Agriculture, University of Illinois and the latter senior agronomist in the office of cereal crops and diseases in the federal bureau of plant industry. The 164 pages of the bulletin are illustrated with 71 different pictures, some of them in colors, to show the nature, damage and control of the various diseases.

Twenty-eight of the more important diseases, including seedling diseases, general diseases of the aerial parts, root rot, stalk rot, leaf diseases and ear rot are dealt with in the bulletin.

Practices which the bulletin recommend as being important in a general program of corn disease control are:

1. Sanitation, that is, the removal of all old corn refuse from the field or the thorough plowing under of such refuse so as to remove it from the surface of the ground. Such refuse carries spores which otherwise are scattered by the wind and reinfect the next crop.

2. Crop rotation, in order to prevent the accumulation of disease organisms in the soil.

3. Soil management, including proper tillage, drainage, and soil fertility, in order to provide conditions favorable to the vigorous and balanced growth of the corn plant.

4. Development of disease-resistant strains in open-pollinated and inbred stock by careful plant and ear selection for freedom from disease, for characters found to be associated with resistance to disease, and for other desirable plant qualities.

5. Seed treatment, in order to check seed-borne diseases and protect the kernel or young seedling against infection from the soil, especially when the environmental conditions are unfavorable for germination.

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Defiant Fleas Routed By Newly Developed Control Plan

Fleas which during the past two years have become more troublesome than ever on many Illinois farmsteads, can now be cleaned out by a newly developed method which is both economical and practical, according to a report to the College of Agriculture, University of Illinois by M. D. Farrar of the Illinois State Natural History Survey. The new method consists of cleaning up and spraying the breeding places of the fleas with a dilute solution of miscible or soluble oil sprays.

Farrar, who holds a research fellowship from the Crop Protection institute, developed the new control in connection with experimental work which he is doing under the direction of the Natural History Survey. Flea relief is especially welcome just at this time in view of the fact that dry weather of the past two seasons has favored the development of the pests, it was pointed out. Human fleas, as well as cat and dog fleas, have been found breeding on Illinois farms.

The first step in the new control method is a thorough cleaning of all the farm buildings, feed floors, sheds and feeding lots frequented by any farm animals. In this cleaning, all manure, straw and dust is removed. Floors covered with dust should be swept off with a broom, leaving only the hard surface. Material removed in the clean-up may be spread on fields at some distance from the buildings.

Following the clean-up of the buildings, the floors and walls to a height of three feet are thoroughly sprayed. The spray used is made from five gallons of miscible or soluble oil to each 100 gallons of water. Several such oils are now marketed and sold for the spraying of fruit trees during the dormant season. Enough spray material must be used to soak up the surface of the floor and penetrate into the cracks of the walls. About 300 gallons of spray material seemed enough for the average farmstead.

-M-

20-Cent Wheat Price Would Have Paid For This Liming

Limestone and sweet clover boosted the wheat yield so high for George Deere, a Morgan county farmer, that the extra bushels would have paid for the limestone, even if wheat were selling as low as 20 cents a bushel, according to a report by C. M. Linsley, soils extension specialist of the College of Agriculture, Universit of Illinois. An increase in yield of 30 bushels an acre was harvested this season by Deere after he had used the Illinois soil building combination of limestone and sweet clover on one of his fields.

With the exception of a strip along one side of the field, the entire 10 acres on which the wheat crop was grown was limed three years ago. A heavy growth of sweet clover was plowed under in the fall of 1929 before wheat was sown. The soil on the field was thin timber land and was too acid to grow clover without limestone. Before limestone was applied and sweet clover plowed under, 12 bushels of wheat and 20 bushels of corn were about all that this land would produce, according to its owner.

Responding to the previous treatment, this year's wheat crop made more than 40 bushels to the acre. Deere estimated that the wheat on the unlimed strip made only 10 bushels to the acre. Thus, Linsley explained, an application of limestone at the rate of three tons to the acre, costing approximately $6 an acre, produced 30 bushels of wheat. This one crop of wheat has paid for the limestone several times over, while the one application of limestone will give similar increases for several years to come.

-M-

50-Cent Premium Rewards Farmers For Grading Of Lambs

A premium on their best lambs of 50 cents a hundredweight above the top market price was the added profit which Adams county sheep flock owners pocketed this year for grading their lambs according to market demands, it is reported by E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois.

They made five cooperative shipments totaling 1,125 lambs which were graded by Farm Adviser S. F. Russell and a committee of lamb raisers at the shipping point. The 87 best fat lambs sold in East St. Louis at an average of $11.20 a hundredweight. There were 514 lambs almost as good which sold at $10.70, 202 bucks at $8.85, 263 medium lambs at $8.30 and 59 culls at $5.65. The average top price on the market at the time of these sales was $10.70, so that the very best lambs in these shipments beat the top by 50 cents.

The medium lambs were of good type but needed another month of feeding to make them fat enough for the market. The culls were of a scrawny type, as well as thin. The worst loss of all was taken by those sheep raisers who brought in buck lambs and found that they sold at an average of $2.35 a hundredweight below the best wethers.

It did not take the farmers long to learn that it pays to sell the kind of lambs the market demands. In the first shipment on May 25, for imstance, 20 percent of the lambs graded as culls. In the very next shipment, there were less than 2 percent of culls, while the last four shipments averaged only 3 percent culls.

The project was carried out in cooperation with the extension service of the College of Agriculture, University of Illinois, and was started last winter. At that time, W. G. Kammlade, assistant chief in sheep husbandry at the college, addressed a meeting at which 57 men pledged themselves to further the lamb improvement idea by docking and castrating their lambs and encouraging others to do so. A check-up showed that 53 farmers who had been selling buck lambs in the past had wether lambs to sell this year. It is expected that none of them will ship buck lambs to the market next year.

-M-

No Cause For Alarm Over Sulphur Spray Injury To Apples

Excessively high temperatures of the past summer were responsible for the injury to apples from sulphur sprays and growers therefore should not be unduly alarmed over the damage, according to Dr. H. W. Anderson, associate chief of pomological pathology of the College of Agriculture, University of Illinois. Orchardists can guard against similar injury in future years by following the college's recommendations on the matter of changing from sulphur sprays to Bordeaux as soon as excessively hot weather is to be expected, he recommended.

"All types of sulphur sprays, including lime sulphur, wettable sulphurs, and sulphur dust caused injury when applied too late in the season. Even when the sulphur sprays were applied in June some injury occurred, owing to the fact that no rain fell to wash off the excess sulphur.

"Fairly definite mahogony-brown areas occurred on the apples where the sulphur injury took place. When the burning was serious the areas were somewhat blackened as though a hot iron had been pressed against the fruit. Later the areas were definitely sunken in some cases. With less serious injury the exposed face sometimes was merely brown and the fruit recovered without serious damage. Direct scald by the sun and hot winds is not to be confused with the sulphur burning."

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Hatcherymen To Meet In U. of I. School, Nov. 20, 21

Illinois' 500 hatchery operators who produce a good share of the $27,000,000 worth of chickens raised annually in the state will attack some of the newer problems of their business in a two-day school to be held for them November 20 and 21 at the College of Agriculture, University of Illinois. L. L. Jones, secretary of the International Baby Chick Association, LaFayette, Ind., and G. S. Vickers, secretary of the Ohio Poultry Improvement Association, Columbus, O., head a list of 14 speakers for the school.

Those attending the school will be welcomed by Dean H. W. Mumford, after which L. E. Card, chief in poultry husbandry, will speak on, "The Hatcheryman and the Poultry Industry." Jones will discuss, "Hatchery Organization" and Vickers will speak on, "A Flock Improvement Program for Hatcherymen" to round out the morning session.

"Hatchery and Incubator Sanitation," by T. S. Townsley, poultry specialist of The Smith Incubator Company, Cleveland, O., will open the afternoon program on the first day. This will be followed by, "Some Aspects of Pullorum Disease Control", by Dr. W. H. Welch, chief veterinarian of the Illinois State Department of Agriculture, Springfield; "Pullorin and Tuberculin Testing of Flocks", by Dr. Robert Graham, chief in animal pathology and hygiene at the college; "Chick Sanitation in the Control of Diseases", by Dr. Frank Thorp, assistant in animal pathology, and "Chicken Pox Control by Vaccination" by Dr. W. A. James, also an assistant in animal pathology.

Opening the second day of the course, Jones will speak on "Care and Management of Hatchery Flocks"; H. J. Sloan, instructor in poultry husbandry, will discuss, "Poultry Feeding Problems", and W. H. Allen, director of research for Acetol Products, Inc., New York, will speak on, "Battery Brooding in Theory and Practice." During the final afternoon of the course, H. H. Alp, poultry extension specialist, will speak on, "Successful Chick Rearing"; Kemp Crome, hatchery owner and poultryman of Albion, will speak on, "My Experience with a Specialty Hatchery"; J. Turner Mills, hatchery owner of McNabb, will answer the question, "Should the Hatcheryman Be a Flock Owner and Breeder?" and Vickers will explain, "Service to Flock Owners and Patrons."

Hatcherymen who attend the school will find a wide variety of work under way in the college poultry division. Experimental projects now in progress include studies on the inheritance of resistance to pullorum disease, growth requirements of chickens and turkeys, cod-liver-oil feeding of chicks, Vitamin E requirements of poultry, and consumer demand for eggs of different quality, as well as the more or less routine improvement of breeding and selection in connection with the regular plant stock. From 50 to 75 students receive instruction in poultry husbandry every year. Important extension service projects are being furthered among farmers of the state to encourage better methods of poultry breeding, feeding and management.

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Fall Is Time To Strike At Costly Pullorum Disease

Close to 75 percent of the death losses in baby chicks are traceable to the infectious pullorum disease or bacillary white diarrhea, and many poultry enterprises have been wrecked by this malady, according to Dr. Robert Graham, chief in animal pathology and hygiene at the College of Agriculture, University of Illinois. Blood testing of flocks in the fall after culling time, in order to detect infected breeding fowls and eliminate them, is one of the two chief hopes for checking the ravages of the disease, he said. The other is the use of sanitary measures to keep down the infection in incubators, brooder houses, and their surroundings.

Several clean flocks already have been established in a testing project inaugurated by the experiment station of the agricultural college, cooperating with local veterinarians. In other flocks the amount of infection has been greatly reduced. However, a single test of any flock will not eliminate all infection. It has been found advisable in some flocks to repeat the test every month until all fowls harboring the disease have been found.

As a means of hastening the extermination of the disease, more than 100 veterinarians during the past six weeks have been given special training in the application of the blood test for the detection of pullorum disease. This training has been given in the animal pathology and hygiene laboratories of the agricultural college. These men are now qualified to give service in every locality of the state, Dr. Graham pointed out.

Control of the disease also is being pushed by the Illinois State Department of Agriculture, through the accrediting of flocks found free from the disease. All persons interested in obtaining accredited flocks should request Order No. 11 from the State Department of Agriculture, Springfield, Dr. Graham said. This order tells how breeders and hatcherymen and flock owners may cooperate with their local veterinarian in obtaining official recognition.

There is no medicine, vaccine or serum that can be used to prevent pullorum disease, Dr. Graham said.

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Test 14,000 Acres In Launching Soil Improvement Plan

Launching a huge, but modern soil improvement program, the Sibley Farms in Ford county this past summer tested and mapped 14,000 acres both for limestone and phosphorus, according to a report by C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois. In furthering the program, renters on the Sibley farms spread 3,000 tons of limestone to sweeten land which has been found to be acid. The testing was done under the supervision of Carl Olsen, assistant manager of the farms. Maps made on the basis of the test results show the renters where limestone is needed and how much should be applied to the acre; also, where phosphate is needed.

The management of the farms furthered the spreading of the 3,000 tons of limestone by renters during the past summer by building a large elevated concrete limestone bin which will hold 360 tons. The limestone is dumped from the cars into a hopper underneath the track, from where it is elevated into the bins. Wagons and trucks are loaded rapidly and easily by means of scouts extending from the bins. Thus, the limestone is transferred from the cars to wagons without shoveling.

-M-

Fourth Group Of Farmers Now Joining Business Service

Better business methods have just about won over another group of Illinois farmers, it is reported by M. L. Mosher, of the farm organization and management department of the College of Agriculture, University of Illinois. The farmers, about 200 of them operating in Grundy, LaSalle, Marshall and Putnam counties, are now organizing to get the benefit of the farm bureau-farm management service project inaugurated in 1925 by the agricultural college as the first cooperative farm venture of its kind in the United States.

The new group will be the fourth one of farmers enrolled in the service. The three already existing are of about equal size and have 635 farmers enrolled in them. The first group takes in Livingston and Woodford counties, the second McLean and Tazewell, and the third, Henry, Knox, Peoria and Stark counties. Mosher is in general charge of the field work for the three groups.

In addition to the 800 or more farmers who will be enrolled in the farm bureau-farm management service project after the fourth group is completed, there are approximately 1,600 farmers keeping regular accounts in the college's farm accounting project. In fact, the farm bureau-farm management service project is a development of the farm accounting work started 14 years ago by the college. Under the new plan the cooperating farmers pay the major part of the local expense.

The service project is based on financial and production accounts kept by cooperating farmers and on records of practices followed by them and kept by the field men who visit the farms at regular intervals throughout the year. The service enables each farmer to know how profitably he is operating his farm as compared with others in the same area. It also indicates clearly where farm profits are leaking, as well as where good work is being done. In addition, it brings to each cooperator definite information about the farm practices followed by the more successful farmers.

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Pinch Of Times Is Bringing Horses Back For Power

Not that they are exactly changing horses in midstream, but more farmers are going back to horses as a source of farm power in the present financial depression, according to a report of the College of Agriculture, University of Illinois by W. H. Coultas, McLean county farm adviser. He has been encouraging the use of big-team hitches and anticipates that even more interest will be shown in them next year than was the case this year. The popularity of the recommended Talkington eveners and buck ropes, which add to the simplicity and effectiveness of the big team hitches, is becoming more widespread every day, Coultas reported. A total of 447 farmers attended seven farm demonstrations which he staged with teams of five to ten horses.

C. E. Johnson, farm adviser in Iroquois county, wrote "Many are permanently adopting the big hitch in this county. All who try two lines never return to more."

Recent reports from farm advisers list 52 big team demonstrations given this year by farmers themselves in 10 different counties with a total attendance of 2,604 of their neighboring farmers. These demonstrations showed teams varying from five to ten horses. Members of the agricultural college staff have given 41 farm demonstrations in 19 counties with a total attendance of 4,160.

The college not only has been advocating big teams for Illinois farmers, but also has been using them itself. A team of six Percheron mares has been plowing steadily this fall on the college farms. They have pulled a 28-inch gang plow, turning furrows eight inches deep with a straightness and accuracy to equal a plowing match.

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Testing Reveals T. B. Threat In Many Poultry Flocks

With 45 per cent of 860,531 Illinois poultry flocks found to be harboring fowl tuberculosis, this disease looms not only as a serious menace to chickens but also to swine and calves on farms of the state, according to Dr. Robert Graham, chief in animal pathology and hygiene at the College of Agriculture, University of Illinois. The tests which revealed the disease in the flocks were made during the past year by accredited veterinarians under the State Department of Agriculture, Springfield.

That infected flocks of poultry are probably the principal sources of avian, or fowl, tuberculosis in swine and calves was established by the college investigators in 1922. This form of the disease is now one of the important causes for the retention of swine carcasses on the Chicago and East St. Louis markets. Hence, if tuberculosis is to be eradicated in cattle and swine, some organized measures must be taken against spread of the disease in fowls, Dr. Graham pointed out. Cleaning up of flocks, in addition to being a protection to other animals, is a distinct economic advantage to the poultry raiser, he added.

Of the 860,531 fowls testedduring the past year, 5.5 per cent reacted to the tuberculin test. Up until the time the disease has reached the advanced stages, it can be detected only by the tuberculin test or by autopsy of infected birds. Local veterinarians are prepared to render a valuable service in the control of the disease to flock owners in every community, Dr. Graham said.

An infected flock can not be cleaned up except by getting rid of all the birds or by testing and eliminating the infected ones. After a flock is once clean, the disease can be kept down by selling all the poultry after the first laying season. Many flock owners have realized the dangers of the disease and launched a clean-up of their flocks, according to Dr. Graham.

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Muzzling Horses Recommended As Disease Safeguard

Farmers in different localities of Illinois who are losing horses used in usking corn can prevent the trouble only by muzzling the horses or by keeping them ut of corn fields entirely, according to the animal pathology and hygiene division of t ollege of Agriculture, University of Illinois. The nature of the disease is not xactly known, but similar losses occurred several years ago. The malady follows a ry summer with heavy rains in the fall. Losses in cattle also have occurred as a esult of the disease, and it would seem advisable to keep cattle out of corn fields his fall if all danger is to be avoided.

Samples of suspected corn submitted to the animal pathology and hygiene ivision have been badly worm-eaten and decomposed. The disease is a fatal digestive ilment, accompanied by sudden bloat, obstinate constipation, labored breathing, loss f appetite and paralysis of the throat. The temperature of such horses remains ormal, but they die in a very few hours following the development of symptoms.

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Soil Surprises Him: Net Saving As A Result Is $450

Soil on Harold Sanderson's DeKalb county farm wasn't as bad as he thought it was and by testing it to make sure, he saved himself $450, according to a report by C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois.

Sanderson had planned to put two tons of limestone and 1,000 pounds of rock phosphate to the acre on a 40-acre field. However, he decided that before applying the materials, he would take samples of soil from the field to a soil-testing meeting being held in the county by Farm Adviser R. N. Rasmusen and the extension service of the College of Agriculture, University of Illinois. A systematic test of the field revealed that it already was high in available phosphorus and therefore did not need a phosphate fertilizer and that only 10 acres of the 40 were acid and needed as much as two tons to the acre. The limestone and phosphate for this field would have cost Sanderson about $450 supplied at the rate which he had originally planned.

During the series of soil testing meetings, DeKalb county farmers tested and mapped 2,000 acres of their land for acidity and available phosphorus. They found that 30 per cent of the land was sweet and did not need limestone for the growing of clover, 36 per cent was slightly acid and needed two tons of limestone to the acre, 36 per cent was medium acid and needed three tons, while 14 per cent was strongly acid and needed four tons. Approximately half of the 2,000 acres tested did not need phosphate.

During the past summer farmers in 50 counties have done similar work in the testing and mapping of their soils for acidity and available phosphorus under direction of their county farm advisers and the soils extension service of the College of Agriculture.

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Plant List Is Not A Guarantee Of A Beautiful Home

"Give me a list of things to plant," an oft repeated request, is a bad mistake Americans make in setting out to beautify their home grounds, in the opinion of Miss Florence B. Robinson, of the division of landscape architecture of the College of Agriculture, University of Illinois. There is no list of plants for any given purpose which will be satisfactory under all circumstances, she said. The result should be seen as a unified whole, not as a miscellaneous mass of separate parts. It should be a single beautiful picture, not a heterogeneous collection of plants, she added.

"Every site, every house and every design is an individual problem with ndividual needs. These needs must be considered in selecting the plants for each eparate problem. Soil and drainage and exposure affect the growth of a plant and iffer in different locations. In addition, the design of the buildings, the materials f their surface, their color and the surroundings will affect the choice of plants f the results are to be beautiful and unified and harmonious, suitable in every way, heir grouping, mass and texture and the color must be studied and related to these urroundings in which they are to grow. Only in this way can one expect to produce ffects worth keeping and entirely agreeable to live with.

"The effect should not call forth such remarks as, 'What a lovely blue pruce,' 'What an exquisite Bechtel's crab,' but rather the comments, 'What a charming cene,' or, 'What a delightful place to live.'"

-M-

Too Many Barns Now Starving Animals Of Required Air

Too many builders of modern farm structures forgot that even a beast can live only three minutes without air, according to W. A. Foster, of the farm mechanics department, College of Agriculture, University of Illinois. As a result, farmers who would not think of starving their flocks and herds or permitting them to go for days without water deny them fresh air for hours, he said. There is no mystery as to why stock kept under such conditions does not come up to expectations, he added.

Solution of the problem is a ventilating system properly designed and installed. Such a system consists of outlets to remove the moisture and foul air and inlets to replace the removed air with fresh air. Ventilating windows in the dairy barn works very nicely until the cold spell comes, after which they are all closed. Open front poultry houses are quite satisfactory if left open. The trouble comes when the open front is closed. A ventilating system, carefully designed, while often costly, conserves heat by controlling the outflow and inrush of air. It continues to function as well in cold spells as in mild weather.

"Old buildings had plenty of fresh air. It poured in the cracks and crevices and with it came the drifting snow. Drafts were present and carried off the foul air and moisture. These buildings were so uncomfortable that builders turned to the other extreme, that is, built better barns and houses of masonry or matched construction. Fresh air was shut out except when a door or window was opened and the breathed air with its moisture and impurities shut in. A cold, damp room resulted. In such rooms, frost appeared on the ceiling during cold spells and grew heavy and white. When it melted and ran down on the floors, it became a real nuisance in cleaning. All this time the hens or cows were feeling the discomfort. Egg production fell off and the milk flow slackened. Then it became serious enough to investigate. Ventilating systems were then designed and installed to correct the fault."

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Logan Farmer Doubles Wheat Crop By Using Rock Phosphate

A doubled wheat crop this year rewarded J. W. Cowan, a Logan county farmer, for improving his soil with 500 pounds of rock phosphate to the acre, according to C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois. With the more efficient yields, Cowan's cost of producing a bushel of wheat will be cut and he has the possibility of converting some of his wheat land to other crops without reducing the total size of his wheat crop, Linsley pointed out.

Wheat on the land where the 500 pounds of rock phosphate had been broadcast before the crop was seeded made 25.5 bushels an acre, while on the rest of the field where no rock phosphate was used the yield was only 12 bushels. The demonstration was planned by W. W. McLaughlin, farm manager for the Citizens National Bank of Decatur in order to determine whether or not rock phosphate would increase the yields of wheat on this land.

The treated wheat not only yielded about 12 bushels an acre more, but also matured about a week to ten days ahead of the untreated wheat. Little difference could be noticed last fall in the growth of wheat on the phosphated land. In fact, little difference could be seen until the wheat began to mature. Then there was a distinct line where the phosphate started and this line could be seen for 10 to 15 rods. Because rock phosphate does not always stimulate early growth, farmers often are led to believe that the phosphate is not benefiting the crop.

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Steers Fail To Show Vaunted Superiority Over Heifers

The much vaunted superiority of the steer over the heifer as a butcher's beast is not as great as has been claimed by many in the beef trade, according to experiments just completed by the College of Agriculture, University of Illinois. In the case of light heifers, at least, there would seem to be no logical reason for the usual price discrimination on account of sex, the investigators found.

Just published in bulletin form, the results of the experiment constitute the college's contribution on the national cooperative project, "A Study of the Factors Which Influence the Quality and Palatability of Meat." The cooperating parties are the federal department of agriculture and 22 state experiment stations. The bulletin is entitled, "Effects of Sex, Length of Feeding Period and a Ration of Ear-Corn Silage on the Quality of Baby Beef." It was written by Sleeter Bull, Fred C. Olson and John H. Longwell, of the college animal husbandry department, who were in charge of the experimental work.

Half of all beef calves are heifers, a goodly portion of which go to market as such, and it therefore was important to determine whether or not the price discrimination against them is justified, the investigators point out in the bulletin. The studies of ear-corn silage rations were incidental to the main purpose of the experiment. Such silage was introduced into the corn belt as a solution of the soft corn problem and many feeders have continued to use it. No studies had been made, however, as to how it affects quality of beef produced.

Light heifers, those weighing around 700 pounds after 140 days of feeding, were found to have distinct advantages over steers of similar feeding, breeding and weight in the matter of finish and they cut out almost as well, the investigators reported. Heavier heifers, those weighing around 800 to 900 pounds after 200 days of feeding, were slightly inferior to steers of equal weight, being a little over-done. The heavier steers also cut out to slightly better advantage than the heavier heifers.

One point of superiority which the heifers demonstrated in the experiments was that they finished sooner than steers. Heifer calves of choice grade weighing around 400 pounds when put on feed required about 140 days of full feeding on a ration of corn, cottonseed meal, corn silage and alfalfa hay in order to produce carcasses that graded choice. Steer calves of similar grade and weight required about 200 days on this ration in order to produce choice carcasses.

It was found that a ration of ear-corn silage, cottonseed meal and alfalfa hay when full-fed to choice feeder calves will produce choice beef but requires 30 to 0 days longer than a ration of shelled corn, cottonseed meal, corn silage and alfalfa hay.

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Illinois Claims Mid-West Honors In Growing Of Apples

Illinois established herself as the supreme apple-growing commonwealth of the middle west when growers from the "corn and hog" state carried off seven of the ten sweepstakes and 123 lesser prizes in competition with 17 other states at the recent Mid-west Horticultural Exposition at Shenandoah, Ia., according to a report by R. S. Marsh, horticulture extension specialist of the College of Agriculture, University of Illinois. Further honors were accorded Illinois when J. C. Blair, head of the horticulture department of the College of Agriculture, was re-elected president of the American Pomological Society, which held its annual meeting in connection with the exposition.

Six of the seven sweepstakes prizes won by Illinois apple growers were captured by E. L. Walker, Pearl, Pike county. He won the top award in the classes for five best bushels, best barrel, best ten trays, best five boxes, best five crates and best peck basket of apples. The sweepstakes prize on best five trays also went to an Illinois exhibiter.

Illinois growers, in addition to Walker, who had entries at the exposition, included W. R. Soverhill, Tiskilwa; S. W. Hall, Griggsville; Arthur Foreman, Pittsfield; L. W. Wise, Barry; Charles Sleeper, Hardin; Frank Dirksmeyer, Hamburg; Harry Herron, Hardin; Louis Ringhausen, Hardin; Harry Ringhausen, Hamburg; and Charles McDonald, Hardin, J. H. Allison, farm adviser of Calhoun county, assisted the growers in his county in the selection and placing of their exhibits.

Illinois' prominence as an apple-growing state which produces 6,500 carloads in favorable years was brought before the exposition visitors by means of an exhibit sponsored by the Illinois State Horticultural Society and arranged by Marsh. Eleven bushels of apples were used in making a wall map of Illinois, which formed the background of the exhibit. It also showed the priminent varieties grown in the state, the methods of packing them and some of the best-known labels under which Illinois apples are sold.

Illinois made another contribution to the convention when four staff members spoke before different sessions of the meeting. They were Professor Blair, W. A. Ruth, chief in pomological physiology, M. J. Dorsey, chief in pomology and W. P. Flint, chief entomologist of the Illinois State Natural History Survey.

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"Topping The Market" May Eat Up Stockman's Profits

"Topping the market", or getting the highest price, which is considered the height of success by thousands of stockmen, often is not the most profitable sale, it is pointed out by R. C. Ashby, associate chief in livestock marketing at the College of Agriculture, University of Illinois. Canny feeders long have recognized that the feeding margin is more important than the selling price. Careful feeders check the cost of feedlot gain and, observing carefully market prices, on their particular kind and grade of stock, sell whenever the ratio of gain-cost to market price indicates the largest return.

This applies especially on hogs. At most markets, hogs that are fat enough to grade "good" sell just as high as those enough fatter to grade "choice". Hence, unless feed is cheap, the feeder often does better not to carry his hogs beyond the "good" stage. A feeder's problem today is not to top the market, but to show a profit on his feeding operations regardless of whether the sale price appears high or low relative to the top, Ashby pointed out.

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More Iodine Not Necessary In Feeds Used In Illinois

Although iodide supplements are a common ingredient of mineral mixtures sold throughout the corn belt, they failed to produce any favorable effect on growing swine and growing chickens in experiments by the College of Agriculture, University of Illinois, according to a report by H. H. Mitchell, chief in animal nutrition. Until unimpeachable evidence to the contrary is obtained there is no good reason for using iodide supplements in livestock feeding except to combat unmistakable goitrous conditions caused by a lack of iodine in feed and water. Animal goitre is either unknown or but rarely encountered in Illinois, he pointed out.

"Results of the experiments should be welcome information to those discriminating farmers who consider the home-mixing of minerals for livestock feeding an economical practice. Iodides are expensive and not available on the farm.

"Animals have a truly remarkable ability to extract iodine from their feed and water. The iodine thus obtained seems to be largely, if not entirely, used in the nourishment of a single organ in the body--a small gland, situated in the neck or at the junction of the neck and the trunk. This gland is called the thyroid. If the iodine contained in this gland is much below normal, it enlarges into a goitre and the whole body suffers. If such a goitre is produced by an iodine deficiency in the food supply, the addition of iodine as potassium or sodium iodide to the food or water, will cure it completely.

"In farm animals, goitre occurs frequently in certain areas of the country, particularly in the states of Washington, Oregon, Idaho and Montana and in parts of Wyoming, Utah, North Dakota and Minnesota. The most disastrous effects of animal goitre are seen in the new-born young. In the goitre areas of the country, livestock raising would be impossible without iodine medication of breeding females.

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Good Cropping Would Block Costly Losses From Erosion

Many thousands of acres of Illinois farm land, which are now being eaten away by destructive erosion, could be saved by nothing more than good cropping systems, well managed, according to Dr. R. S. Smith, chief of the soil survey of the College of Agriculture, University of Illinois. On steeper slopes, however, special precautions in the way of terraces, sod barriers, straw and brush fills and soil-saving dams must be used.

"Investigators of the Missouri Agricultural Experiment Station found that on a gentle slope seven inches of soil was eroded away in 56 years under continuous corn cropping, while under a rotation of corn, wheat and clover, the time required for the erosion of seven inches of soil was extended to 437 years. On the same slope, a grass sod reduced erosion so much that it will require 3,547 years to remove the surface seven inches of soil. These figures teach that good farming is an effective foe of erosion. In fact, it may actually change erosion from a foe of the land to a friend, for a very slow rate of erosion is beneficial because it constantly renews the formed layer by bringing the deeper layers toward the surface.

"Destruction is taking place on a field whenever erosion is going on so fast that it can be seen. Harmful erosion on intermediate slopes is widespread throughout the corn belt of Illinois. Fortunately, all that is needed in many cases to correct this condition is a good cropping system so handled as to provide protection to the land during as much of the time as possible. Also, corn stalks rolled down so they lie at right angles to the slope decrease the rate of flow of the run-off water and slow up erosion."

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The Extension Messenger

COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
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Buries Old Fallacy By Doubling Crop Of Corn

A popular fallacy held by farmers who have never tried sweet clover for soil building has been buried under a double corn crop produced this year by Ernest Malmquist, a tenant farmer in Bureau county, according to a report by L. B. Miller, assistant in soil experiment fields of the College of Agriculture, University of Illinois

Like other farmers who hold to the fallacy, Malmquist thought that he could not afford to wait for sweet clover to benefit his soil. So strongly did he believe this that he was considering buying a fertilizer attachment for his corn planter. However, a demonstration was planned in which a strip of common white-blossom sweet clover was seeded across a 40-acre oat field in the spring of 1929. The land had never grown sweet clover and was low in organic matter, although it was naturally sweet and therefore suited to the growing of legumes. The clover made a fine stand and good growth and the entire field was plowed late in the fall of 1929 for the 1930 corn crop.

That part of the field having sweet clover on it produced 52.2 bushels an acre, while the balance of the 40 acres yielded only 24.6 bushels. This difference of 27.6 bushels an acre in favor of the sweet clover land resulted from the seeding of sweet clover at a cost of about $1 an acre. Fortunately, Malmquist needed no limestone in this field, but said that he would gladly haul limestone when it was needed to get such results. He reported that the only place in the field where he could find good seed ears was on the strip of sweet clover land.

Phosphate, potash and complete fertilizer were applied in the row at corn planting time on a small part of the field as a comparison with, and also in addition to, the sweet clover. Results from this treatment were disappointing, ranging from a slight loss in yield to a gain of only 3.3 bushels an acre.

Farmers who are looking for the kind of results which Malmquist got can start now preparing for them, Miller pointed out. If the land on which the 1932 corn crop is to be grown is acid, it will first need some limestone. Limestone spread this fall will be weathered and ready for prompt action on the clover seeding next spring. Plowing down the clover next fall will put the land in shape for the 1932 corn crop.

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Small County Holds Illinois Record For Limestone Use

A record, which one of the smaller counties of Illinois established last year in the use of agricultural limestone, still stands as a mark for other counties, according to figures announced today by C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois. The county is Monroe and the record 43,000 tons of limestone hauled and spread by farmers in their efforts to produce more efficient crop yields, he said.

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Electricity For Corn Germinator Costs But Little

Ten cents for every bushel of corn tested is all that it costs for the electricity to operate an electric seed corn germinator when the power is secured at heating rates, according to E. W. Lehmann, head of the farm mechanics department, College of Agriculture, University of Illinois. This cost is very slight when the value of a germinator for detecting the health and vitality of the seed corn is considered, he points out. Men who do custom germinating usually charge from $2.50 to $3.00 a bushel for testing corn.

Tests carried on by the experiment station of the agricultural college and reported in Bulletin No. 332, "Electric Power for the Farm," indicates that the amount of electical energy consumed depends upon the construction and insulation of the box and its location. A well-built box, properly insulated and located in a basement or any reasonably warm room will consume very little electrical energy.

In one test, a box with a capacity of 1,600 ears used 34.4 kilowatt hours of electrical energy during the germinating period at a cost of 6.4 cents a bushel, with electricity at 3 cents a kilowatt hour. This germinator box was located in an outbuilding where some heat was supplied by a coal stove during the day time. A test on a large germinator with a capacity of 14,000 ears used 495.7 kilowatt hours and cost 7.6 cents a bushel. This germinator was in an unheated building. The average energy rate was operated on a lower rate. A test on a small germinator with a capacity of 800 ears operated with electricity supplied from a small unit plant showed a consumption of 10.96 kilowatt hours. This germinator was located in the basement of a residence where it was quite warm which accounts for the low energy consumption. The cost of operating this germinator was calculated on the basis of cost of fuel and oil consumed and amounted to 18 cents a bushel.

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Work Out Helpful Clues On Injury By Oil Sprays

Seven years' work by the College of Agriculture, University of Illinois to solve the problems of oil spray injury to tree fruits have brought out the suggestions that oil foliage sprays should be used with caution, that highly refined oils may not be a guarantee against injury, that the under sides of leaves should not be sprayed unless such spraying is essential for the control of insects and that oil should not be applied when the humidity is very high. Victor W. Kelley, associate in pomology, who performed the experiments, reports the results in a new bulletin which the experiment station of the college has just published under the title, "Effect of Certain Hydrocarbon Oils on the Transpiration Rate of Some Deciduous Tree Fruits."

Most sprays under some conditions are harmful to the plants which they are designed to protect, but perhaps no spray material has been so universally suspected of causing injury as has oil, the bulletin points out. The subject has become of general interest since the revival of the use of unsaturated oils in the dormant season for the control of scale insects and the more recent use of saturated oils as insecticides or ovicides during the growing season.

The degree of retardation in transpiration rose with the increase in concentration of the oil. However, one-half of 1 percent, the lowest concentration used, caused a definite decrease in rate. There was no constant significant difference between saturated highly refined and unsaturated oils in their effect upon transpiration. This suggests that the effect of the oil is physical rather than chemical.

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Poisoned Bait Is Hardest "Cat" On Destructive Mice

Mice now migrating into houses and other buildings where they will damage food, clothing and other property can be cleaned out most effectively with poisoned bait, according to a report to the College of Agriculture, University of Illinois by G. C. Oderkirk, rodent specialist of the Federal Biological Survey, cooperating with the Illinois State Natural History Survey. The bait recommended is made from powdered strychnine on rolled oats.

"This bait can be used in the majority of infested buildings. It is prepared by mixing 1/8 of an ounce of powdered strychnine and 1 tablespoonful of common baking soda with 1 quart of dry rolled oats. One-half teaspoonful of it is placed at intervals along the wall of a room. It should be scattered slightly instead of placed in piles.

"In granaries and similar places where food is stored, the floor should first be swept before the bait is distributed. In bins containing grain, burlap sacks can be laid on top of the grain and the bait scattered upon them.

"In houses, traps will remove mice within a short time if carefully tended. Lack of success in trapping usually results from the fact that two few traps are used. At least a half dozen should be set in a room infested with mice. Small pieces of bacon, raisins, nutmeats, banana or cheese can be tied on or a pinch of rolled oats merely placed on the triggers of the traps. They should be placed along walls and near objects in the room where mice will come in contact with them. If a number of traps are properly baited and tended, it requires but a few days to remove an infestation of mice."

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$1 For Limestone Pays Back $7.50 In Better Yield

Farmers who can't spend $1 in order to make $7.50 are the only ones entitled to say that they can't afford to buy limestone to sweeten their acid soils, according to C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois. Every $2 invested in a ton of limestone for acid soil will return $15 or more in more efficient crop yields, he said.

"Not being able to afford it, is a reason often given by farmers for delaying the use of limestone. This sometimes is an honest reason. The farmer may not have the ready cash or he may not be able to borrow. Bankers, however, would usually rather loan money to the farmer for limestone than for any other purpose. They know that an investment in limestone is a sound one and one of the most profitable that a farmer can make.

"Many of the farmers who are now using limestone were compelled either to go into debt or save and sacrifice in order to buy their first carload. They were willing, however, because they realized that this was a sure and profitable way of increasing their income for the future."

"When a farmer reaches the point where he feels that he can not afford to buy limestone, that is just the time when he can not afford not to buy limestone," was the comment of one limestone farmer. Another said, "If some oil stock salesman would approach these farmers who say that they can not afford to buy limestone and offer them stock in an oil well which was guaranteed to return $15 for every $2 invested, most of them would manage to get together at least $100."

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Timely Notes for Farm Advisers and others from the Agricultural College,
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Improved Prices Believed Ahead For Hogs During 1931

At least one of the standbys of Illinois farmers--hogs--face a more favorable situation during 1931 than has prevailed during the past year, according to an outlook statement prepared by agricultural economists of the College of Agriculture, University of Illinois. An improvement in hog prices should make itself felt at least by the latter half of the new year, the authorities believe.

"Those areas in Illinois which produce the most hogs have harvested the best corn crop this fall. Producers in these regions should be in position to take advantage of the favorable outlook for a year hence. In areas where feed supplies are limited, the present low prices of corn and other feed grains are favorable to maintaining normal production, even if feed must be bought."

Two things point to a reduced production of hogs in 1931 and hence better prices for those which are produced, the statement points out. In the first place, the corn-hog ratio, or the number of bushels of corn required to equal the value of 100 pounds of hogs, live weight, has not been favorable during the past few months. In the second place, a small corn crop like that of 1930 usually has been followed by a smaller than usual hog crop.

"If business conditions improve in 1931, as is generally believed, such a change will strengthen the demand for hogs as well as for other products. Improvement in hog prices should become evident at least by the latter half of 1931.

"Heretofore, two poor corn crops have never come in succession. Hogs furnish the largest single outlet for the corn crop in this country. With the prospect of a better corn crop in 1931 than was harvested in 1930 hog prices in the late fall and winter of 1931-32 are likely to be relatively better than corn prices."

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Banker-Farmer Banking On Limestone For More Profits

R. C. Taylor, banker and farmer of Cass county and one of the largest landowners in that section of the state, is banking heavily upon limestone to multiply his profits, according to a report by C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois. Last year he spread 35 carloads, of 1,800 tons, of limestone on his farm and in 1928, he spread 26 carloads, or 1,400 tons. He expects to lime all of his acid land as fast as he can get the material hauled and spread. He knows that on such land no limestone means no clover, no clover means low yields and low yields mean high cost of production and little or no profit, Linsley pointed out.

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Heavier Losses Threatened By Cattle Lice This Winter

Cattle lice, which run up a heavy toll in the form of reduced milk yields and slackened gains, are likely to be more troublesome this winter than usual, according to a report to the College of Agriculture, University of Illinois by C. C. Compton, assistant entomologist of the Illinois State Natural History Survey. There has been a gradual increase in louse population on dairy animals and other stock in the past two years, owing largely to lack of proper control measures. Fortunately, the lice are not hard to eradicate until a heavy infestation is allowed to develop, he said.

If cattle are treated by the first of December and subsequent treatments made at definite intervals, cattle lice will never become very numerous, nor their control difficult. Too many times the mistake is made of treating only the badly infested animals. The entire herd should be treated each time if the most satisfactory and economical results are to be obtained.

The best treatment is raw linseed oil. Boiled or refined linseed oil is likely to injur the skin. The oil may be applied with a handbrush or in the case of short-haired animals, with a wad of cloth. A brush having uneven bristles is best adapted to this work. A second treatment should be given two weeks following the first and then monthly applications should be made until spring. The oil should not be applied too vigorously but enough should be put on to reach the skin. It is a good plan to keep treated animals out of the sun for a day.

Another treatment which is effective consists of dusting the infested parts with a derris powder. Commercial preparations are now available for this purpose. This treatment is easy to apply and has no bad effects whatever upon the animal treated. However, the cost is somewhat greater than when linseed oil treatment is used.

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New-Found Facts Have Bearing On Orchard Management

Studies by the College of Agriculture, University of Illinois to locate the roots of bearing apple trees have disclosed facts which have an important bearing upon the common practice of cultivation in the management of orchard soils, it is reported by W. A. Ruth, chief in pomology physiology. In the light of the experimental results, shallow cultivation rather than deep would always be preferable, he pointed out.

A surprisingly large proportion of the feeding roots of bearing apple trees were found near the surface and in the area shaded by the branches. In fact, about one-half of the finer roots of a fifteen-year-old Johnathan tree were within three inches of the surface and about two-thirds of them were within six inches. Of the finer roots within six inches of the surface, three-fourths or more were in the soil under the branches.

"If cultivation is a part of the orchard management system, and it usually is, it would appear to be unwise to cut off feeding roots by cultivating too deeply, especially at critical times. Since a drought may occur any time in the growing season, and since the trees may often need an uninjured root system in the spring, when the flowers are setting it would appear that shallow cultivation would always be preferable. It is also evident that special care must be exercised in cultivating after any treatment that encourages the growth of shallow roots. A superficial growth of roots is the result of any practice which raises the water content of the surface soil. It is accomplished by mulching with straw and probably by preserving drooping branches which shade the ground under the trees."

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Rodents Riddle Young Unguarded Trees During Winter

Thousands of young fruit trees in Illinois will again be killed or injured this winter by mice and rabbits feeding on the trunks or larger roots, unless orchardists take precautions against these rodents, it is pointed out by R. L. McMunn, of the pomology division, College of Agriculture, University of Illinois.

Mechanical tree protectors are very effective in shielding young trees from rabbits and the meadow mouse, which feeds above the ground. Protectors made of one-fourth inch hardware cloth, or sand screen, are the most satisfactory and cheapest in the end. This material should be cut to measure 10 to 12 inches wide by 18 inches long and then placed around the tree trunk. Such protectors can be left until the tree outgrows them. Protectors made of window screen wire and small-meshed chicken wire netting are unsatisfactory in that the screen wire rots out very quickly and the chicken netting gives no protection against mice. Paper and wood veneer protectors are not to be recommended since mice can gnaw through them easily. Such protectors also have a disadvantage that they must be removed each spring to allow for the enlargement of the trunk.

The southern mouse, a species that works underground, must be fought with other methods besides tree protectors. Allowing young pigs the run of the orchard for two months after harvest will aid in ridding the orchard of this pest. Such a practice should not be carried on in orchards younger than six or seven years, since the pigs are very likely to push over younger trees. A good poison bait can be prepared by boiling together for ten to fifteen minutes 1/2 ounce of strychnine, 1 3/4 pints of water and 4 pounds of sugar and then adding 1/2 peck of wheat and barley for two or three minutes longer. The mixture is then removed from the fire and stirred vigorously so that all kernels are coated. The seed of squash, pumpkin and melons are better than wheat if they can be obtained. A few grains of bait should be dropped in each hole and in the runways. All poisoned bait should be covered with vegetation so that birds can not gain access to it.

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Home Butchering Supplies Pork At "Good Old Prices"

Prices which prevailed "in the good old days of 40 years ago" today will provide the farmer with sugar-cured ham, breakfast bacon and pork chops for the family table, provided he will dress, cut and cure his own pork, according to Sleeter Bull, associate chief in meats at the College of Agriculture, University of Illinois.

With live hogs worth 8½ cents a pound on the farm, a 225 pound hog will furnish sugar-cured ham at 17 cents a pound, breakfast bacon at 19 cents, and pork chops at 17 cents. Costs of other cuts are: Boston (the top of the shoulder), 13 cents; picnic (the bottom of the shoulder), 10 cents; spare ribs, 8 cents; lard, 8 cents; and sausage, 13 cents.

"A comparison of these prices with prices for the same cuts in the butcher shop show that the farmer who butchers his own pork will be well paid for his time and labor. This does not necessarily mean that the retail butcher is exacting an unreasonable profit. Home butchering simply lumps together all the costs and profits of the stock buyer, the railroad, commission man, the stock yards company, the packer and the retailer and gives them to the farmer who goes to his own barnyard for his meat supply."

Directions for the up-to-date slaughter, cutting and curing of pork have been prepared by the college meats division for distribution to interested farmers.

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Wasting $80 Makes Warren Farmer A Heavy Lime User

Eighty dollars worth of clover seed which he unknowingly wasted on acid land made such a limestone convert out of Fred Pattee, a Warren county farmer, that he has hauled and spread 1,000 tons of limestone on his farm during the past two years, according to a report by C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois. He used 700 tons in 1929 to sweeten his acid land and during the past summer hauled and spread an additional 300 tons.

Two years ago Pattee seeded red clover on an unlimed 40-acre field of oats. The clover came up in a fair stand but made very little growth. In an adjoining field where limestone had been applied, red clover produced a fine stand and made a heavy growth. Both fields were subject to the same rainfall, weather, and season. The only difference was that the acidity of one field had been corrected with limestone. The failure of clover on the unlimed ground cost about $80 in clover seed. Pattee was convinced it would be better business to buy limestone with the money he was throwing away on acid land.

In handling his large tonnage of limestone, Pattee has worked out a scheme for saving both time and labor. Under his method, six men with two trucks easily can unload and spread a 60-ton car of limestone in a day. He has a hopper which fits on the side of a limestone car. Two men in the car shovel the limestone into the hopper and the load is then dumped into the truck as soon as it returns to the car from the field. The load is transferred by simply releasing a trap door, thus making it unnecessary for the trucks to stand idle while the load is being shoveled. Time and labor also are saved in spreading the limestone. The two trucks are equipped with endgate limestone spreaders so that the loads are spread without being transferred to a wagon or regular limestone spreader. Besides the two truck drivers, two men are used at the field to shovel the limestone into the spreader.

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Americans Wasting Millions Through Faulty Building

With the present-day specialization in the various crafts, the American public, and particularly the rural class, is losing millions of dollars through trying to build without plans or with a set of poor plans, according to W. A. Foster, rural architecture specialist of the College of Agriculture, University of Illinois. Two or three generations ago, he pointed out, one man built a building, doing many of the operations himself and supervising the entire structure. Today with many crafts and each man doing a limited amount of work, a set of good plans is cheap at any price. The farm mechanics department has available a comprehensive list of plans of farm buildings for which an architect's services ordinarily would not be secured. The list also includes a number of house plans which are suggestive and which could be used by people who could not afford an architect.

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Dairy Plant Men To Get New Facts In U. Of I. Course

Higher quality products and other problems facing the operators and employees of Illinois' 1,200 dairy manufacturing plants will be taken up in a dairy manufacturers short course to be held January 26 to 30 at the College of Agriculture, University of Illinois. P. H. Tracy, assistant chief in dairy manufactures, will be in charge. The course will be a chance for all persons engaged in various kinds of dairy plants to get acquainted with the most recent information concerning the handling, manufacture and sale of dairy products.

Prominent speakers, in addition to members of the dairy department staff, who have been scheduled on the program include S. V. Layson of the Illinois State Department of Public Health, Springfield; A. W. Farrall, of the Douthitt Manufacturing Company, Chicago; F. W. Bouska, of Beatrice Creamery Company, Chicago; N. W. Hepburn, of the Peoria Creamery Company, Peoria; H. W. Mumford, dean of the College of Agriculture, University of Illinois, and A. L. Young of the farm mechanics department. A feature of the course will be a bound copy of all the lectures which will be distributed to those enrolled.

The range of topics for the course includes the control of the composition of dairy products, methods of grading milk, including the various tests used in determining milk quality; problems of dairy engineering, the manufacture of dairy by-products, including condensed milk, chocolate milk, cultured milk drinks and various kinds of soft cheese; control of the pasteurizing process so as to obtain a satisfactory cream line and to prevent cream plug, cream feathering and off flavors, manufacturing of butter, butter defects and methods of prevention and ice cream and problems related to its manufacture.

The annual banquet of those attending the course will be held Wednesday evening, January 28, with Dean Mumford as the principal speaker.

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Bond Farmer Uses Limestone And Clover To Double His Yields

Frank Potthast, Bond county farmer and former president of his local farm bureau, estimates that he has doubled his crop yield and hence widened his margin of profit by using limestone and sweet clover for soil building, according to a report which he has just made to C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois. In line with the college's recommendations, Potthast started using limestone on his farm 18 years ago. All the crop land of 190 acres has been limed once and 70 acres have been limed a second time.

This year the wheat crop on his sweet clover land averaged 25 bushels to the acre. In 1929 the average yield was 28 bushels. Without limestone and sweet clover, the wheat yield during these years would have averaged about 12 bushels to the acre, Potthast estimated.

His corn crop this year made only about 20 bushels to the acre owing to the severe damage from the drouth. Commenting on this, he said "Altho this is not a very heavy corn crop, it is just 20 bushels more than I would have had if my land had not been limed. In 1929 my corn averaged 60 bushels to the acre with limestone and sweet clover. Without limestone and sweet clover this land would have made about 25 bushel to the acre.

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Machine Farming Problems Billed In U. Of I. Course

A rapid increase in the use of mechanical power and power machinery on Illinois farms has put farmers of the state up against new problems which will be dealt with in two tractor and gas engine short courses at the College of Agriculture, University of Illinois in January, it is announced by R. I. Shawl, of the farm mechanics department. The first of the two courses will be given the week of January 19 to 24 and the second, the week of January 26 to 31. The same work will be given in both courses.

Instruction will be of a practical nature designed to be of benefit to many of the owners and operators of the estimated 80,000 farm tractors in Illinois and the many road and industrial tractors.

Laboratory equipment available for those taking the courses consists of fifteen tractors of the latest design. There also are ten tractor engines mounted on frames, 30 farm gas engines and a representative assortment of magnetos, carburetors, air cleaners and engine parts.

The operation and principles of construction of engines, valves, valve timing, ignition, fuels, carburetors, lubrication and engine troubles will be explained in three hours of lecture work each day of the courses. Moving pictures will be used to show many interesting phases of a power farming not covered during the lecture or laboratory period. For four or five hours a day there will be practical laboratory work covering the subject of engine construction, tractor construction, engine timing, make and break ignition, high tension ignition, carburetor study and adjustment, tractor and gas engine trouble work and tractor operation.

Materials used by those taking the course will be covered by a fee of $2.50 for each person enrolled. The number registered in each course will be limited to 30 by the equipment available. The farm mechanics department of the college and county farm advisers are receiving application for registration.

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Locate Heaviest Yielding Barley For Illinois Farmers

The highest yielding variety of barley, which on a limited acreage, would be a better paying crop for Illinois farmers than so much of the now widely grown oats, is a smooth-bearded variety that goes by the name of Wisconsin Pedigree 37, according to a result of tests by the agronomy department of the College of Agriculture, University of Illinois. This variety has been the best yielder at Urbana for the past three years with an average of 51.7 bushels an acre and the best at DeKalb for the past two years with an average of 53.4 bushels an acre. Like Velvet barley it has smooth beard.

A similar strain known as Wisconsin Pedigree 38 is considered as good as Winconsin Pedigree 37, but has not been grown longer than one year in the Illinois test plot. The barley ranking next in yield at DeKalb is Black Barbless followed closely by Velvet. At Urbana the varieties yielding less than the Wisconsin Pedigree 37 rank in the following order: Spartan, Glabron, and Black Barbless.

Up to 1928 barley was gaining rapidly in popularity with Illinois farmers but since then the acreage has been decreasing, according to George H. Dungan, associate chief in crop production. In 1926 and 1927 the returns an acre based on the average farm price and average yield showed barley to be more than 90 per cent more profitable than oats. In 1928, however, owing to the scab epidemic, both the yield and price went down until barley was only about 10 per cent more profitable than oats. As a cash crop barley is still better paying than oats.

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COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

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Hundred Million A Year Spent For Farm Building Upkeep

One hundred million dollars toward providing employment and maintaining economic stability will be thrown into the breach by Illinois agriculture if farmers go ahead with a normal year of farm building construction, it is estimated by W. A. Foster, rural architecture specialist of the farm mechanics department, College of Agriculture, University of Illinois. This big program is spread over a large area and much of it is small repairs or unimportant buildings which seem negligible in themselves but mean a lot in total expense, he pointed out.

"Of course, if this huge expenditure is to pay returns it should be done with extreme care, wise choice of materials and full use of first class plans. Makeshift repairs, temporary constructions and ill-chosen materials do not give full value for the expenditures in time, materials or money.

"The farm building value of Illinois approaches a round billion dollars, or about one-seventh of the farm wealth of the state. Some of these buildings last for a lifetime or even a century or longer. The vast majority, however, are short lived. Conservatively, less than a score of years would see a complete turnover of the average buildings. Hence, the farm building construction for the state would approach 100 million dollars each normal year.

"Storm, fire, poor construction and weather, in addition to normal wear, all contribute to this toll. Then again, unless the building is carefully planned and correctly built it is out of date long before it has worn out. This means that the building should be carefully designed so it may be converted into other uses if times and conditions demand."

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$7.50 Is Cost Of Farming Without Legume Crops

The many farmers in the corn belt who are operating with no legumes or with a very small percentage of them in their rotations may be taxing themselves as uch as $7.50 an acre or more for the "privilege" of farming this way, according to . B. Miller, associate in soil experiment fields at the College of Agriculture, niversity of Illinois. This is revealed in the results of the ten-year period just nded on the college's Morrow plots, the country's oldest soil experimental grounds, e said.

Under a rotation of corn, oats and clover on one of the Morrow plots the verage annual income an acre was $22.03. In contrast, the annual acre income under two-year rotation of corn and oats was only $14.44 or $7.59 an acre less than under he three-year rotation containing a legume. There was an even wider difference of 9.23 in the average annual acre income between the three-year rotation and a system f continuous corn cropping.

Even the three-year rotation of corn, oats and clover can be improved pon by adding wheat and using sweet clover as a green manure crop, Miller said.

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Less Insect Loss In 1931 If Haunts Cleaned Out Now

"Surprise attacks" launched against insects while they are in winter quarters are one of the best and easiest ways to keep down the toll which these pests will take with their new and increased numbers in next season's crop, according to J. H. Bigger, assistant entomologist of the Illinois State Natural History Survey.

Outstanding among the field crop insects which spend the winter in hedges, fence rows and timber land are the chinch bug and flea beetle. Others like the stalk borer and army worm spend the winter in grass and weeds in similar locations. Burning these hibernating quarters should be considered an essential part of farming operations. especially in chinch bug infested areas, Bigger recommended in a report to the College of Agriculture, University of Illinois. Several of the insects attacking clovers spend the winter in hedges and fence rows and in the trash, old stubs and heads in and about clover fields. These, too, may be given a setback by cleaning up and burning fence rows and fields.

Orchardists, especially, will be well repaid for cleaning up all refuse and burning the grass and leaves in and around the edge of the orchard. The codling moth can live over in twigs lying on the ground, in old crates and boxes piled under the trees or in discarded clothing or other similar articles left in the orchard. Leafhoppers and the apple flea weevil spend the winter in the grass and leaves on the ground under the trees. The plum curculio lives in similar places in nearby timber land.

Pests of vegetable gardens such as aphids, flea beetles, leaf-hoppers, striped cucumber beetle, squash bug and onion maggot spend the winter in plants and bulbs left in the ground and on the field, in piles of trash or in the grass, leaves and fence rows adjacent to the gardens.

Burning may be done any time during the winter, the sooner the better. A time should be chosen when the grass and leaves are dry to a considerable depth, Burning always should be made against the wind. This insures a hotter, longer-lasting fire and one which is not liable to escape and burn where it is not wanted.

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Small County Has Reason For Being Heavy Limestone User

One of the smaller counties of Illinois probably would never have been one of the heaviest limestone users of the state had it not been for a speedy method of getting limestone from the railroad car to the farmer's wagon or truck, according to C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois.

The county is Bond and it boasts of a scheme whereby limestone can be transferred from the railroad car to the farmer's waiting truck or wagon at the rate of one carload every two hours, The service is offered by the Farmers' Equity Elevator, Greenville, and farmers of the vicinity have been quick to take advantage of it, Already this year, 100 carloads, or 5,000 tons, of limestone have been handled by the elevator. Last year farmers in the community ordered 125 carloads of limestone through this elevator. This was about one-third of the 18,000 tons of limestone which farmers of the entire county used last year to sweeten their acid soils and make the growing of clovers possible.

The loader was installed for the benefit of farmers in the community and no extra charge is made for the service. Rapid unloading of limestone without shoveling is made possible through an elevator of the belt-conveyor type which has been installed on the railroad siding. The limestone is shipped in bottom-dump cars which make it possible to dump the limestone directly into the hopper under the track. From there it is elevated into the farmer's wagon or truck. The hard work of shoveling is done away with and a truck or wagon can be loaded in two or three minutes.

Farmer, Too, May Now Enjoy His Bath In A Tinted Tub

It's no longer a question of whether or not the farm home shall have a bathtub, but instead, a problem as to which of the new tint shades it shall be, according to E. G. Johnson, farm mechanics extension specialist of the College of Agriculture, University of Illinois. Savings which can be made in the installation of the farm plumbing system have brought tinted bathtubs within reach of farm families he said. At least one farmer, Omer Hossel, of Sumner, already has taken advantage of the saving to give his wife this most modern household convenience.

The saving, which amounts to $17, is made through using collapsible, rentable forms in building the concrete septic tank which the College of Agriculture, University of Illinois has designed and which it recommends for Illinois farms. Not only do the forms save money, but also they greatly simplify the making of the septic tank, which is often the bugbear in the whole problem of installing plumbing in the farm home.

Twenty-five county farm bureaus and several lumber yards in Illinois have the collapsible forms to rent to farmers and others. Lumber in these forms costs $12 and there is at least $8 worth of labor on them, making the total a minimum of $20. The forms usually are rented for $3 so that the saving to the farmer is approximately $17.

These collapsible forms can be used 20 times or more before they are worn out. Many county farm bureaus have been putting them to good use during the past year. C. E. Gates, farm adviser of LaSalle county, reports that that county's forms have been used five times since last May. J. E. Harris, farm adviser of Mercer County, says that farmers in that county have built three septic tanks with the rentable forms since the latter part of September.

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Find A Practical Plan Of Farming Illinois Hill Land

Erosion, a costly drain on the fertility of Illinois farm land, has been stopped almost entirely and crop values boosted nearly $18 an acre by proper soil treatment as practiced on the soil experiment field which the College of Agriculture, University of Illinois maintains at Elizabethtown in Hardin county, according to a report by C. J. Badger, assistant in soil experiment fields. Erosion, or washing away of the soil, is worst in the hilly regions of the state, as represented by the Elizabethtown field.

Plots on the field which have received no treatment whatever are crossed with difficulty with machinery. Deep ditches have been washed out on these poor plot In contrast, on other plots where manure has been applied or where limestone has been used and sweet clover grown and plowed down, the surface is easily crossed with machinery and no deep ditches have been washed out.

In one experiment on this field where sweet clover was grown and plowed under for the improvement of the soil and both limestone and rock phosphate applied in addition, the average yearly value of crops over a four-year period was $22.43 an acre. The average yields during this period were 14.3 bushels of wheat an acre after corn, 41.9 bushels of corn, 17.9 bushels of wheat after a legume and 3,720 pounds of good legume hay. In contrast, the untreated and badly washed plots have yielded crops having a yearly value only of $4.51 an acre. Here the yields have been 1.2 bushels of wheat an acre after corn, 9.3 bushels of corn, 5.6 bushels of wheat after a legume, and 600 pounds of poor quality hay. On plots where manure and limestone have been applied, the average yearly value of the crops during the four-year period was $18.23 an acre. The yields were 9.2 bushels of wheat after corn, 35.9 bushels of corn, 14.9 bushels of wheat after a legume, and 3,100 pounds of good legume hay.

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Solve Spoilage Problem In Soybeans By Crossbreeding

One of the problems in the growing of soybeans, a crop which has spread to new popularity and importance during the past few years, has been solved through the crossbreeding of different varieties, it is announced by C. M. Woodworth, chief in plant breeding at the College of Agriculture, University of Illinois. By crossing two varieties, plant breeders of the college have succeeded in producing yellow-seeded varieties which will withstand unfavorable weather conditions in the field after ripening, he said. The results demonstrate that if a variety has a tendency to spoil in the field, this tendency can be eliminated or lessened by crossing with a variety having a hard seed coat, he explained.

Soybeans that do not take up water readily when soaked are said to have hard seed coats. While yellow and green soybeans do take up water quite readily, black and brown soybeans do not. In fact, certain varieties of black and brown soybeans can be left out in the field all winter and yet a number of the seeds will germinate the following years. This suggested to the plant breeders that there was a relation between the hard seed coat character and seed coat color.

A yellow variety, Dunfield, a soft seed coat, was crossed with a brown type having a hard seed coat. Seeds borne by plants of the first generation were intermediate in their ability to take up water, but were nearer the Dunfield in this respect than they were to the hard seed coat parent. In the second generation, there was considerable variation in the ability to take up water, the seeds from some plants being as hard as the hard parent, others as soft as the soft parent with considerable variation between these extremes. The majority of the plants resembled Dunfield rather than the hard seed coat type. Also there was evidence of a transgressing of the limits set by the parents. That is, some plants were even harder than the hard parent and others softer than the soft parent.

A genetic relation was found between seed coat color and hardness of the seed coat. The cross produced yellow, brown and black-seeded types. Plants with yellow and brown seed coats usually were soft like the Dunfield parent, although a few of each were just as hard as the brown parent. Most plants with black seed coats were hard; plants with soft black seed coats were the exception. Since the relation is not perfect or complete, it is possible to transfer the hard seed coat character to a yellow soybean, and to transfer the soft seed coat character to a black or brown soybean.

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Abuse Hastening Old Age Of Soils And Scanty Yields

Old age is fast taking its toll from Illinois soils, just as it does in human life, and as a result crop yields in this state are dropping off year after year, according to E. A. Norton, assistant chief in soil survey at the College of Agriculture, University of Illinois. Soils are not stable and everlasting as is commonly believed, but are subject to continual change. Illinois farm lands are growing old through the operation of two forces, one being natural and the other artificial. Not much can be done to forestall the operation of the natural forces, but farmers can practice an efficient system of soil management which will prevent much of the land impoverishment for which they have been responsible in the past, Norton said.

Man is the principal artificial factor in promoting soil age. He has removed the original vegetative land cover subjecting the soil to serious erosion. By cultivating the soil man has increased the rate at which the destructive climatic forces operate. By removing crops from the land man has rapidly depleted the available plant food elements in the soil. To counteract all this, it is necessary that sound and efficient systems of land cultivation be practiced. Illinois has much old yet young land; that is, youthful in development but old because of being farmed hard. These soils are comparable to the old looking young man who has taken on the features of age because of overwork.

Good land management also retards the action of the natural forces which age soils. These weathering forces are constantly at work breaking down soil minerals, carrying away soluble plant food elements, forming compact, impervious layers and developing a definite set of soil characteristics.

Soils have youth, maturity and old age and their cycle of development is comparable to the span of human life. In maturing, they develop a set of features just as young people develop character and personality as they mature. Features which characterize aged soils in Illinois are gray color, acidity or sourness, well-defined surface, sub-surface and subsoil layers and scant supply of available plant food, all of which combine to lower the crop production level. These soil characteristics compare with gray hair, stability of body features, loss of activity and tendency toward conservatism which marks old age in man.

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Long-Used Farm Scale Proves Superior To Most Others

After giving more than 50 years' service, there is at least one farm scale in Illinois which still tests "good" but more than 88 percent of all those tested failed to measure up to this standard, regardless of how long they had been in use, according to R. C. Ashby, associate chief in livestock marketing, at the College of Agriculture, University of Illinois. The scales, 105 of them, were tested in connection with livestock shrinkage studies conducted by the college.

The need for better maintenance if farm scales are to be of maximum use in modern day farm marketing was one of the striking things brought out by the studies. Few of the 105 scales had ever been overhauled or even tested. No other piece of farm machinery is expected to give accurate and continuous service for 25 to 50 years without service or attention, Ashby pointed out.

There were 12 scales, including the one which had been in use more than 50 years, which rated "good" because the error in them did not exceed 2 pounds in each 1,000 pounds of test load. The average period of use for 11 of these good scales was more than 31 years. Eight of the 11 were protected by scale houses or were inside farm buildings. This indicates the sort of service that well-built scales, properly installed, protected from the weather and given even reasonable care are likely to render, Ashby said.

Skilled Horse Feeders Can Save Hundreds Of Dollars

One place where many Illinois farmers could be saving themselves hundreds of dollars in these times is in doing the every-day job of feeding horses with more care, according to R. H. Wilcox, of the farm organization and management department, College of Agriculture, University of Illinois. This is revealed in records which farmers are keeping in cooperation with the department, he said. Between two typical central Illinois farms, for instance, there was a difference of $788 a year in horse labor cost for the same amount of work. This is an example of the savings which can be made by giving some thought to the kinds and amounts of grain required at different seasons of the year.

The two farms adjoin and both operators had kept careful records in cooperation with the college. They each operate about 370 acres of land and each has a tractor. During the year in question, however, one carried twelve horses while the other handled his crops with only eight. In a comparison of their notes, the farmer with the twelve horses was much surprised to find that his neighbor had carried each one of his eight horses on an average of 2,150 pounds less grain and 200 pounds less hay than he had.

At the same time, his own twelve horses had each worked only 667 hours in a year's time, while each of the eight on the adjoining farm had done 922 hours of productive work. The expense of operating the tractor on the farm with eight horses was $471, while on the farm with twelve horses, the tractor expense was $438.

When the feed bill on each farm was added to the other costs of keeping horses, the farmer with twelve showed an average cost of $137 a horse, while his neighbor with eight head had spent only $108. These wide differences in costs and hours worked, meant that the farmer who had fed his eight horses no more than they really needed, and got high performance from them, incurred a cost only of $2.30 for a two-horse team in the field ten hours. In contrast, his neighbor with high feed costs and low performance from each horse, had a cost of $4.14 for a two-horse team working ten hours. On his 370 acres, the man with eight horses did just as much work as the other with a yearly horse labor cost $788 less.

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Terraces Convert Wasteful Gullies Into Paying Land

Wasteful gullies so deep that a mule was buried in one of them two years ago have been filled up and are now being farmed over by Ed and Erwin Fosse, Williamson county farmers living near Marion, since the building of terraces to reclaim and save the land. Since taking over the 300 acres a few years ago, the two brothers have carried out an extensive soil building program in which terracing has played a large part, according to E. G. Johnson, farm mechanics extension specialist of the College of Agriculture, University of Illinois. Already 150 acres of the farm have been terraced.

"Three men were kept busy most of the time last spring putting in tile, spreading lime and terracing," the brother Ed told Johnson when he visited the farm recently. "We feel that it is not only worth while but also necessary. We need the tile for the low spots and terraces for the high ground. We wanted to lime the land but knew that unless we put in terraces the lime would all wash away."

The two brothers staked out the terraces with a $25 farm level and used a 0-20 tractor and steel V-shaped drag in building them. They learned how by reading Circular No. 290 from the College of Agriculture, University of Illinois, entitled, "Saving Soil by the Use of Mangum Terraces," and the U.S.D.A. Farmers Bulletin No. 1386, "Terracing Farm Lands".

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New-Type Tomato Is Hailed As Boon To Greenhouse Men

The most serious problem hampering the growing of greenhouse tomatoes, an important Illinois industry, has been solved by horticulturists of the College of Agriculture, University of Illinois through the breeding and development of two new varieties which are resistant to the disease, Fusarium wilt, and which at the same time yield far more than other varieties.

The work was done by Walter A. Huelsen, associate chief in olericulture, and Merl C. Gillis, associate, and is reported in a new bulletin just released by the experiment station of the college. It is No. 361 and is entitled, "Breeding Two New Varieties of Greenhouse Tomatoes Resistant to Fusarium Wilt".

The varieties are now ready for commercial use after four years during which they were developed and tested. They have been named Blair Forcing and Lloyd Forcing in honor of Dr. J. C. Blair head of the college horticultural department, and Dr. J. W. Lloyd, chief in olericulture.

Tomato wilt, or Fusarium wilt, has been of increasing concern to greenhouse growers until it is now recognized as the most important disease affecting tomatoes grown in Illinois greenhouses. Growers have resorted to the use of resistant field varieties, but these have not proved entirely satisfactory under glass. Even the best of the resistant field varieties, when grown in the greenhouse, fails to pollinate well and the yields often are seriously reduced in the cloudy weather and short days of late fall and early winter.

The two new varieties, which overcome these troubles, were developed by combining certain varieties that are wilt-resistant with the Grand Rapids Forcing variety, which is noted for its ability to blossom freely and to set fruits under adverse conditions.

In addition to their wilt-resistance and yielding ability Blair Forcing and Lloyd Forcing have a desirable type and size of fruit which has proved acceptable in several markets. These varieties also are characterized by earliness of maturity and a picking season that is relatively short compared with that of the best resistant field variety.

Tomatoes, lettuce and cucumbers undoubtedly are the three major vegetable crops grown in Illinois greenhouses. Many growers consider tomatoes of more importance than the two other crops and at the same time considerably more profitable owing to the fact that they seem able to compete much more successfully with the southern-grown product. Many growers are now raising both fall and spring crops of tomatoes in the same house. Such intensification naturally has brought to the fore a number of problems which those interested in the business wish to have solved. Fusarium wilt has been of increasing occurence among these problems.

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Shifts Plans At Last Minute And Saves $150 Expense

One of those last-minute changes in plans has put Russell Hurleman, an Adams county farmer, $150 ahead of where he might have been, according to a report by C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois.

Anxious to get the best crop yields possible, Hurleman had made plans to order two carloads of limestone, costing $150, for one of his 40-acre fields. The change in plans came when S. F. Russell, farm adviser of the county, suggested that the field first be tested and mapped to find out whether or not limestone was needed and just how much should be applied to correct whatever acidity was found. Much to Hurleman's surprise, the test revealed that the entire field was sweet and therefore did not need limestone.

"Although most of the land in Adams county and the rest of the state is acid and therefore needs limestone before it will grow the all-important legumes successfully, there is nevertheless, a large acreage that still contains plenty of lime," Linsley explained. "Soils of the state, often within a single field, vary widely in their need for limestone. Soils that are slightly acid, medium acid and strongly acid may be present in the same field. It is important, therefore, that a systematic and detailed test be made so that limestone may be applied according to the need for it.

"This systematic testing of soils is one of the projects being sponsored among Adams county farmers by Farm Adviser Russell. In promoting the work, a series of local meetings is held in the various communities of the county. Farmers are given directions for collecting samples of soil from a single field or from their entire farm. These samples are brought into a later meeting where they are tested under direction of Farm Adviser Russell. A map is then made of each field showing where limestone is needed and how much should be applied to the acre. This takes the guesswork out of soil treatment."

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$25 Septic Tank Still Gives Farm City Conveniences

Built for $25 as part of a modern farm plumbing system, one of the first Illinois-type septic tanks ever installed is still giving satisfactory service without ever having caused trouble, according to a report of its owner, Rollo Booz, Colusa, to the College of Agriculture, University of Illinois. The Illinois-type tank was designed by the farm mechanics department of the college in an effort to remove one of the barriers to modern conveniences on Illinois farms.

The one upon which Booz reported was built as a demonstration by the farm mechanics extension specialist of the college when the tank was being introduced throughout the state in 1925. "It hasn't given us a speck of trouble", Booz said in making a report on the first five years of service. It is estimated that cleaning out the accumulation of sludge, one of the necessary operations with septic tanks, will not have to be done for 15 or 20 years.

The Illinois-type tank is 10 feet long, 3 feet wide and 5 feet deep. It takes 20 bags of cement, costing $15, one and one-half yards of sand and three cubic yards of gravel. According to E. G. Johnson, farm mechanics extension specialist of the college, anyone who can build a concrete sidewalk or a concrete feeding floor can build his own septic tank by following the directions in the college's circular No. 336 "Sewage Disposal for the Farm Home".

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Better Practices Profit Livestock Men $500 A Year

Farmers who have built up their livestock efficiency by following the teachings of the College of Agriculture, University of Illinois frequently report as much as $500 a year extra income on that account, even on an average quarter-section farm, says E. T. Robbins, livestock extension specialist.

Such a farm usually has about five horses and the saving in man labor by using these in big team hitches, as advocated by the college, amounts to $5 or more a horse a year, or a total of at least $25. If there are as many as 16 ewes, they usually raise about 20 lambs and the gain is about $1 a lamb as a result of having them born early so as to be sold in June and another $1 a lamb as a result of docking and castrating, making a total of $40 there. If there are six cows raising beef calves, the saving by keeping the cows entirely on rough feed is about $10 apiece, or if as many as six steers are fattened, the saving by using an economical ration, balanced with a low-priced protein, may amount to as much as $10 a steer. In either case the total would be $60.

If twelve sows are kept to raise a carload of 75 hogs which are marketed at a weight of about 225 pounds, the saving on each hog as a result of sanitation is about $2.50, and the saving by balancing the grain rations with feeds supplying protein at a low cost a pound, amounts to another $2.50, making a total saving of $5 a hog. This would amount to $375 on a carload of 75 head.

The total of these items for the four classes of livestock is $500. That stock would consume about 2,500 bushels of corn in the course of a year and so would fit in well with the general plan of farming followed over much of the corn belt. The figures are said to be typical of what may reasonably be expected.

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Machines Paving Way For Needed Reforms In Farming

One of the needs of the times on Illinois farms — lowered costs of production — is being brought about through the rapid increase in the use of mechanical power and power machinery, according to R. I. Shawl, of the farm mechanics department, College of Agriculture, University of Illinois. To meet the needs of farmers for information and instruction on the use of mechanical power the college is offering two tractor and gas engine short courses. The first will be held January 19 to 24 and the second January 24 to 31.

"Farmers whose farming practices will make it possible to improve their efficiency and economy by the use of modern machinery will, no doubt, buy this machinery during the next 5 to 10 years. Farmers whose conditions will not permit the economical use of modern machinery, owing to size of farm, topography, farming practices or some other reason, either will have to change their practices or be satisfied with a lower standard of living.

"However, it should be borne in mind that the development of new or improved machinery to handle present crops better or take care of new ones, always will be a factor in increasing the use of machinery on farms. The widespread use of machinery, after it has been perfected to meet the needs of the farmer, will depend largely upon the economy of its use. With the continued decrease in agricultural population, with the greater perfection of farm machinery and with the trend toward larger farming units, there undoubtedly will be many conditions where further mechanization of farms will result in lower costs of production and larger profits.

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Sanitary Forces Thinned Despite A 20-Million Need

Illinois alone is paying a toll of not less than twenty million dollars annually for animal diseases and yet the ranks of the veterinary sanitary forces have been depleted to the point where scarcely enough graduates are being turned out to replace vacancies in the federal bureau of animal industry, not to mention the need of practitioners in city and urban districts, according to Dr. Robert Graham, chief in animal pathology and hygiene at the College of Agriculture, University of Illinois.

An adequate veterinary personnel is essential not only for agriculture but also for protection of public health, Dr. Graham pointed out. With two large livestock centers in the state's borders and the speeding up of transportation facilities, a contagious disease at any point on the continent constitutes a potential threat to the husbandry and public health of Illinois, he explained.

In Illinois there are approximately seven million people who are dependent upon 11,000 physicians for information regarding health. This is approximately one physician to every 633 persons. In the same territory there is a population of about 33,000,000 food-producing animals including barnyard fowls. The state has only about 600 veterinarians who are especially trained in the suppression of animal diseases. The average Illinois veterinarian's services extend to 50,000 potential animal patients. This is one veterinarian to each 3,300 dairy and beef cows, 8,555 swine, 1,163 sheep, 583 dogs and 41,666 chickens.

Certain of the animal diseases such as tuberculosis, rabies, glanders, anthrax, Brucella infection of cattle, goats, swine and possibly chickens, septic sore throat and certain specific dermatoses, actinomycosis and a group of parasitic infections, including ringworm, pork and beef measles and trichina, are communicable to man.

Some diseases of man traceable to animals may be most hopefully suppressed by the veterinarian. To this end the veterinarian may be advantageously used in extending meat and milk inspection programs, while physicians may be assisted in checking diseases of man traceable to animals by working with veterinarians, Dr. Graham said.

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Find Wide Gap In Relative Prices Of Farm Products

Recent years have seen development of wide differences between the relative prices of important Illinois farm products, but no single cause can be assigned for the wide variety of change, it is brought out in a new bulletin just issued by the College of Agriculture, University of Illinois. It is No. 365. "Prices of Illinois Farm Products from 1921 to 1929" and was written by L. J. Norton, assistant chief in agricultural economics.

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Poultrymen Using New Calendar But Not 13-Month One

Although the proposed 13-month year has not yet been put into effect, Illinois poultrymen have started using a new type calendar which represents something of a reform over old kinds. In order to aid flock owners in more accurate record keeping, H. H. Alp, poultry extension specialist of the College of Agriculture, University of Illinois, has designed a serviceable calendar which makes it possible for the poultry raiser to tell from day to day, week to week, and month to month, just where he stands.

Lack of a handy recording device has prevented many flock owners from keeping the records so necessary as guides to better methods, Alp explained. The new calendar is so arranged that under each date there are spaces to record the number of eggs, the income and the expense for that day. Spaces also are provided for recording the weekly totals and the monthly totals.

One of the features of the calendar is a standard of egg production for each month of the year. This standard is calculated from records which hundreds of poultrymen throughout the state have kept in cooperation with the college. In January for instance, it is 5.6 eggs a hen, in February 8.8 eggs a hen, March 15.4 eggs a hen and so on. On the sheet for each month there also is a place to record the number of birds at the first of the month, the number of birds culled during the month, the number of birds that died during the month, number of birds at the end of the month and the average number of eggs for the month.

Unlike most others, the new calendar does not feature the pretty girl. Instead, each month the illustration deals with some subject of timely interest to poultrymen. In February, for instance, it is homemade equipment, in March, a baby chick feeder, and in April, clean ground for the brooder house. Likewise, each monthly sheet carries a number of timely tips for poultrymen.

Copies of the new calendar are available to all interested poultrymen at a nominal charge to cover cost of printing.

-M-

Proper Pruning Aids Apple Grower Net $17,500 On Crop

A southern Illinois apple grower with a 100-acre orchard spent $10,000 for growing a crop and received $27,500, while a western Illinois orchardist with 500 acres spent $25,000 to produce a crop the same year and got no more than his expenses in return.

The difference in profit, according to R. S. Marsh, horticulture extension specialist of the College of Agriculture, University of Illinois, traces not to the fact that the southern grower spent more money an acre but rather to the fact that he did more than just part of a job. Recently, for instance, he employed four men to prune his trees. Every year his 30-year-old orchard gets a careful pruning so that he harvests a high percentage of No. 1 fruit.

Even if pruning isn't neglected, it can be done either a wrong way as well as a right way, Marsh pointed out. In fact, some methods of pruning are more unprofitable than no pruning at all. Pruning methods have changed greatly in the past few years and it is therefore important for growers to get the latest practical and scientific information on the subject, Marsh explained.

"No pruning cut should be made unless there are good reasons which substantiate the pruner's decision to make the cut. All the detailed directions on the latest methods of pruning apple trees are given in a circular which the college published last year. It can be secured from county farm advisers or from the college by writing for Circular No. 349 'Pruning Apple Trees in Illinois.'"

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Woodland Owners Now Underselling Valuable Products

In far too many cases the material cut from woodlands in Illinois is sold only for a fraction of its real value because owners of timberland tracts as a rule are not familiar with the standard methods employed in marketing. This is set forth in a new circular entitled, "Marketing Illinois Forest Products," which has just been published by the College of Agriculture, University of Illinois. The author of the new publication is L. E. Sawyer, extension forester of the college and of the Illinois State Natural History Survey.

In order that an owner may get a fair price for his timber he should first secure an estimate of how much timber of each species he has for sale, it is recommended in the circular. His next step is to get in touch with the consumers of the different species and secure bids from as many of them as possible.

"The timber market, like all others, has its periods of depression and the owner should avoid selling during a slump. While a large part of the mature timber in Illinois should be marketed, it is usually not depreciating so rapidly that it will have to be sold at once or become a total loss. The owner, therefore, should not be influenced too much by a buyer's statement that his timber is 'going back rapidly.'"

The four common methods of sale explained in the circular are: (1) by lump or lot, (2) by log scale, (3) by the piece or count and (4) by lumber tally. All these methods have their advantages and disadvantages, but none of them will bring the owner the maximum returns if his timber has to go through the hands of several middlemen before reaching the consumer, it is pointed out in the circular. Selling direct to the manufacturer or consumer will yield the owner the most money. Direct selling may be accomplished by determining what products are to be marketed and then getting in touch with the concerns handling those products or with their local buyers. Many woodland owners who do not have enough timber to allow them to ship logs or other products to manufacturers in carload lots often are unable to find a local market that will pay a satisfactory price. This difficulty can be overcome by marketing the products from one locality on a cooperative basis.

-M-

Illinois Sheep Flock Owners Warned Against Lambing Ill

With the lambing season at hand, Illinois sheep flock owners will profit by being on guard against lambing paralysis, a fatal disease in ewes, which takes a heavy toll each year, it is pointed out by the laboratory of animal pathology and hygiene at the College of Agriculture, University of Illinois.

The disease is associated with over-feeding and lack of exercise, officials of the laboratory say. The all-important points in avoiding it, therefore, are proper feed and exercise preceding the lambing period. There is no medicine, vaccine or serum effective in the prevention or cure of this disease. If ewes are in too high condition, it is advisable to reduce the rations and force the animals through feeding practices to walk a distance each day preparatory to conditioning for lambing, it was recommended.

Affected animals do not eat and are unable to walk. Sleepiness or drowsiness lapse into coma with death following in a majority of cases. A review of the cases submitted to the college over a period of years shows that animals most often affected are in high condition and unfit for the strain of lambing.

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New 100-Bushel Corn Club Has One Gold-Medal Winner

Rewarded with an official gold medal, C. E. Canterbury, Sangamon county farmer living near Cantrall, is the first, and so far the only, winner of a membership in Illinois' new 100-Bushel Corn Club.

Five other farmers, R. Richardson, Williamsville; Arthur Wolters, Grand Ridge; Fred Holm, Peru; Howard Clegg, Rutland, and Lester L. Lehmann, Pleasant Plains, were awarded bronze medals for having produced between 75 and 84 bushels of corn an acre.

The 100-bushel club is an adjunct of a men's 10-acre corn contest launched this past year by the extension service of the College of Agriculture, University of Illinois and the Illinois Crop Improvement Association for the purpose of furthering the more economical and profitable growing of the state's principal crop.

Awarding of the medals was a feature of the annual banquet of the Illinois Crop Improvement Association held in connection with the recent thirty-third annual Farm and Home Week at the college. The presentation was made by W. E. Riegel, Tolono, president of the crop improvement body, and W. R. McGaughey, Decatur, president of the Illinois Bankers' Association.

Out of 40 farmers in ten different counties who entered the contest last spring, Canterbury was the only one who grew 100 bushels or more of corn an acre on his ten-acre plot. His yield was 100.4 bushels an acre and was produced at a total cost of $32.17 an acre, including fertilizers, labor and machinery charges, seed treatment, overhead, taxes, use of land and harvesting.

Richardson grew 81.8 bushels an acre at a cost of $30.04 an acre, Wolters 80.4 bushels at a cost of $27.81 an acre, Holm 77.1 bushels at a cost of $35.50 an acre, Clegg 75.9 bushels at a cost of $30.91 an acre and Lehmann 75.1 bushels at a cost of $26.08 an acre.

Canterbury for a number of years has been a strong proponent of the utility-type corn advocated for Illinois farmers by the agricultural college and has developed his own strain. He sack-picked his seed corn from the standing stalk and treated it for the control of seed-borne diseases. The field was planted April 29.

His 100-bushels an acre was produced in a year when such yields were rarer than ever because of the dry weather. He follows the college's system of permanent soil fertility, having limed the field at the rate of 2½ tons an acre six years ago and spreading a half ton of rock phosphate to the acre this past spring. The field had been in alfalfa for two years previous. The soil is brown silt loam and is tile-drained. In preparing the field for planting, Canterbury plowed it seven inches deep the latter part of March, went over it twice with a tandem disk, twice with a pulverizer and then harrowed it once before planting and once before the corn came up. The seed was drilled 12 inches apart in the row with 36 inches between rows.

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Electrical Heat Promising In Propogation Of Plants

Electricity already has proved so successful as a substitute for manure in hotbed heating that it is difficult to predict the uses of electric heat energy in plant propagation, R. R. Parks, farm electrification specialist of the Missouri College of Agriculture, said at the recent thirty-third annual Farm and Home Week of the College of Agriculture, University of Illinois.

Electric hotbeds, owing to their simplicity and ease of operation, are becoming highly popular with Missouri gardeners, he reported. With better practices, electric hotbeds for home use might be feasible. Open soil heating for the early starting of grapes, sweet potatoes, rhubarb and other garden vegetables also offer possibilities, he pointed out.

Electricity is superior to manure for hotbed heating in that it is clean, free from odors, easily handled, dependable and in many cases is more economical than manure on a cost basis, Parks pointed out. Among the advantages of the electric hotbed over the manure bed are that labor costs are reduced because of handling heating apparatus rather than tons of manure, the hotbeds can be started later in the season because of the more dependable heat and more normal growth of the hotbed plants and an earlier market can be obtained for all crops.

"The method of heating is simply to lay the heater cable out in the old manure hot bed frame. The frame is filled with six inches of hotbed soil and the ends of the cable connected to 110-volt service wires. Sixty-four feet of lead-covered resistance wire cable are needed in a 6 by 16 foot bed. One or two 6 by 16 foot beds can be operated direct from the house lighting circuit.

"This scheme has been tried out by gardeners around St. Louis during the past two seasons with considerable success. A season's operation on a 6 by 16 foot bed costs $6 to $10, depending upon the use to which it is put. The cost of equipment for a 6 by 16 foot bed is approximately $2 for cable and $2 for switching and fusing equipment".

Although Parks and his cooperators have found this scheme successful, they are continuing their work during the present season to find better ways and means of insulating their hotbeds against heat losses.

-M-

Dairymen Urged To Make Wider Use Of Own Products

Most markets at the present time are flooded with a surplus both of whole milk and cream and it therefore behooves the producer to use as much of his product as possible in as many different ways as he can, S. L. Tuckey, first assistant in dairy manufactures, recommended before the farm dairy operations section of the recent thirty-third annual Farm and Home Week at the College of Agriculture, University of Illinois.

Good soft cheeses, like neufchatel and cottage, for sale at farmers' markets will return to the producer a good monetary profit and when used at home will effectively replace other high protein foods, Tuckey said. Good soft cheeses can be made with the use either of junket tablets or rennet extract, it was explained. Milk soured under controlled conditions with a certain strain of bacteria is far more desirable than ordinary sour milk. Cocoa syrup added to milk will lend variety. The housewife can well afford at the present time to serve custards, creamed vegetables, creamed soups, gravies and similar dishes.

-M-

450 Herd Owners In 75 Counties War On Bang's Disease

Recognized as the worst profit destroyer in the cattle industry of Illinois, Bang's disease, or infectious abortion, is being warred upon by 450 herd owners in 75 different counties, Dr. Robert Graham, chief in animal pathology and hygiene, reported to the recent thirty-third annual Farm and Home Week of the College of Agriculture, University of Illinois.

The 450 herd owners are enrolled in the college's experiment station project on Bang's disease control and with the help of the institution and their local veterinarians are testing and handling their herds with a view to completely eliminating the disease, Dr. Graham said. Already 30 herds have been accredited as free from the disease by the Illinois State Department of Agriculture. Forty-five veterinarians of the state have been accredited for applying the necessary test for detection of the infection.

"No owner can afford to maintain a herd of cattle infected with Bang's disease. Neither can dairymen and beef cattle breeders risk judging the presence or absence of the disease by the breeding record alone. It has been shown that many animals infected with the disease breed normally.

"Bang's disease causes loss through decreased breeding function, as many infected animals ultimately become sterile. The milk flow of infected animals also is reduced. In good dairy cows loss from milk flow alone may approach $50 annually. Different udder diseases are more numerous in cattle harboring Bang's disease than in healthy animals. Finally, the loss of offspring must be added to the breeding difficulties and decreased milk flow".

-M-

Present Prices Favorable For Modernizing Farm Homes

Present low prices of labor and materials make this a good time for remodeling and modernizing a great majority of the quarter million houses on Illinois farms, W. A. Foster, rural architecture specialist, pointed out at the recent thirty-third annual Farm and Home Week at the College of Agriculture, University of Illinois.

This majority of houses were built when materials and labor were cheap and before the present demand of modern equipment, greater production and efficiency, he explained. The old farm house was surrounded by many accessory buildings, such as the wood shed, pump house, wash and butcher house, dry house, loom house, smoke house, cave, coach house and others.

"Modern methods, utilities and efficiency have eliminated all these buildings and the drudgeries have become simple tasks by improved methods and labor saving equipment. Today all the tasks are done, the equipment sheltered and the storage made within the four walls of the farm house.

"Modern heating, sanitary equipment and storage require a basement in the farm house. Also a basement saves steps and exposure and adds to the comfort of the comfort of the house".

-M-

Natural Sources Of Fertilizers Best For Illinois

Natural sources of fertilizers still prove the most efficient for Illinois farms, A. L. Lang, associate in soil experiment fields, reported to the soils section of the recent thirty-third annual Farm and Home Week of the College of Agriculture, University of Illinois.

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New Chemical For Treatment Of Seed Is Yield Booster

A new seed treatment chemical, ethyl-mercury-chloride, increased oats yields slightly more than 12 bushels an acre and wheat yields almost 9 bushels an acre when it was used for treating the seed to control diseases, according to results of tests made on it by the experiment station of the College of Agriculture, University of Illinois. The increase in the oats yield was an average of a three-year test, while the increase in the wheat yield was an average of a two-year experiment.

The new chemical is a dust which is applied to the seed in the usual way but which costs somewhat more than seed disinfectants heretofore in general use. The expense is about 20 to 30 cents an acre for the material alone.

In each test which the college made of the new treatment, the seed was locally grown and of good quality. In no case was the seed unusually heavily infected with any one particular disease. The result indicates that this treatment is effective in controlling a number of seed-borne diseases and also protects the very young seedling from certain infections caused by organisms living in the soil, it was pointed out by Benjamin Koehler, assistant chief in crop pathology.

"As the understanding of diseases is enlarging and at the same time new chemical discoveries are offering safer and more effective chemical disinfectants, the viewpoint of the place seed disinfectants should hold in the general program of agriculture is changing. We no longer are concerned so much with treating only to eradicate smut, for there is much more than that to be accomplished. Some of the diseases which cut yields are inconspicuous and often unsuspected. Seed is treated primarily to increase yields of grain. Ethyl-mercury-chloride has done this consistently in the tests so far, even if before treating there was no smut infection carried on the seed either of oats or wheat."

-M-

Sunlight Injures Flavor When Milk Is Kept Outdoors

A tallowy or even a burnt flavor in milk about which housewives in Chicago and other cities recently have been complaining may be caused by nothing more than leaving the milk exposed to light, according to P. H. Tracy, assistant chief in dairy manufactures at the College of Agriculture, University of Illinois. Milk users who take advantage of natural refrigeration during the winter months and leave bottles of milk standing in windows or unprotected out of doors are likely to find that the flavor is impaired, he said.

Permitting the bottle of milk to remain in the sunlight even for 30 minutes may cause the milk to acquire a tallowy flavor sometimes described as a "cappy", or pasteboard, taste. If the milk is allowed to remain in the sun long enough a distinct burnt flavor will predominate. If the bottle of milk is exposed to diffuse light only, such as that on the north side of a building, the butterfat will be affected by the light and the milk will develop the tallow, or "cappy", flavor.

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Printed in furtherance of the Agricultural Extension Act approved by Congress May 8, 1914. H. W. Mumford, Director.

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Some Illinois Soils Yield Ten Times More Than Others

Illinois farm lands vary so widely that crop yields from the most productive are worth about ten times as much as those from the least productive. This is reported in a new bulletin, No. 362, which the experiment station of the College of Agriculture, University of Illinois, has just issued for farmers and other interested persons under the title, "Response of Illinois Soils to Soil Treatment." It summarizes results from 28 of the college's soil experiment fields that are located on representative types of Illinois soil and that have been under investigation for periods ranging from 15 to 26 years. F. C. Bauer, chief of soil experiment fields, is author of the new publication.

Among the dozen soil treatment lessons derived from the fields was the fact that farm manure used alone is an effective fertilizer on all kinds of soil. However, on some soils it added more than $9 an acre annually to the value of the crops grown, while on other soils it increased crop values only $2 an acre.

The more highly productive soils which will grow clovers without being treated usually can be made still more productive by plowing down crop residues without additional treatment. On one such field this system added nearly $9 an acre annually to the value of crops grown. On the other hand, the moderately productive and less productive soils did not give very marked responses to this system of soil treatment.

Limestone applied in addition to farm manure or crop residues increase the value of crops grown as much as $17.75 an acre annually on some soils. This was a return of more than $35 a ton for the limestone used. The more productive, dark-colored soils did not give so great a response as the light-colored ones, although on many of them the returns were profitable.

On some soils phosphate added more than $10 an acre annually to crop values. The low response on other fields suggested that farmers need to know the phosphate requirements of their fields before applying this material.

Light-colored, more mature soils gave strikingly greater response to potassium fertilizers than did the dark colored less mature soils. On most fields of light-colored soils, use of potassium has become profitable. The less productive, dark-colored soils also have tended to give profitable responses to potash fertilizer.

-M-

Balanced Rations Speed Economy Of Gains Made By Pigs

Many Illinois farmers report that they are putting across the rather unusual but economical feat of making their fall pigs gain as fast as spring pigs usually do by following the recommendations of the College of Agriculture, University of Illinois on balanced rations. They are feeding their fall pigs all the corn they will eat and also supplying in a self-feeder a mixture of two parts tankage, one part linseed meal or soybean meal, and one part alfalfa meal, according to E. T. Robbins, livestock extension specialist. The alfalfa meal is used only in winter to take the place of pasture and is an important factor in making fall pigs thrive. Common salt seems to be the only mineral needed with this plan of feeding.

This same plan of feeding with omission of the alfalfa meal has worked out well with spring pigs. Albert Hayes, of Peoria county, sold several truck loads of his spring pigs last September weighing a little more than 200 pounds at six months of age and bringing $11.10 to $11.40 a hundredweight. These were sanitation pigs fed according to the college's plan. Those prices compared with prices of $8 to $8.50 a hundredweight which farmers got in late December for pigs fed on ordinary rations and grown at the customary moderate rate of gain.

-M-

Accounting Adds $2,000 A Year On Some Farms' Profits

Many Illinois farmers have added from $600 to $2,000 a year to their earnings through keeping and studying careful farm accounts, according to a new circular entitled, "Farm Accounts that Count," which has just been issued by the College of Agriculture, University of Illinois. It explains how the Illinois farm account book, prepared by the college farm organization and management department, is helping farmers get the increased earnings. The author is R. R. Hudelson, associate chief of the department.

Careful accounts will earn profits for any farmer who will keep and use them, because the present-day farmer needs a guide in making choices and decisions which will reduce losses and increase profits, it is brought out in the circular. The standard farm accounting service started in 1916 by the college farm organization and management department is designed to fill this need. In 1929 approximately 2,000 farmers completed their accounts and had them analyzed by the department.

The farmer who wishes to keep accounts may get the Illinois account book and by following the instructions in it keep his records by himself. He may, on the other hand, enroll in the simple farm accounting project through his local county farm adviser and the college extension service and keep his accounts on a cooperative plan. Under this latter arrangement he gets much more information of a useful type from his records with less time spent on them.

-M-

Orchardists Told Serious Scale Is Becoming A Threat

A recent survey of Illinois peach and apple orchards reveals that the destructive San Jose scale, favored by the mild fall and winter weather, is beginning to regain some of the ground it lost by last winter's freeze, according to a report to the College of Agriculture, University of Illinois by S. C. chandler, assistant entomologist of the Illinois State Natural History Survey. This will put added importance on dormant sprays which orchardists will be applying soon, he pointed out.

"One thing that must be settled in connection with dormant sprays is the choice of material. In the case of apples the answer is simply 'oil'. There is no need for a fungicide on apples in the dormant spray. Oil emulsion and most of the miscible oils are cheaper than lime sulphur, easier on the machine and hands and eyes of the operator and do a better job of killing scale.

"In the case of peaches it is necessary to spray for peach leaf curl as well as scale. The Illinois State Natural History Survey, in cooperation with the College of Agriculture, University of Illinois, has been experimenting with a number of combinations, some of which are highly promising. For the present, however, the safest and most efficient combination for both scale and leaf curl is the oil Bordeaux mixture which in general has proved very satisfactory."

-M-

Florists To Have Week at U. of I. February 3 to 6

One of Illinois' important industries, that having to do with the growing and selling of flowers, will set about to prepare for better times when the eighth annual florists' week is held February 3 to 6 at the College of Agriculture, University of Illinois. Pointing out that this is a good year for florists to add to their stock of knowledge and "prepare for the era of prosperity that will soon be upon us," the college has announced that marketing, costs of production and the selling of flowers will be stressed in this year's course. H. B. Dorner, chief in floriculture, is in charge. Members of the Illinois State Florists' Association will hold their annual meeting February 5.

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Disease Control Would Save Fifth Of Valuable Corn

More than one-fifth of Illinois' most valuable grain crop, corn, is lost every year through diseases which could be at least partially controlled, according to a new circular entitled, "Control of Corn Diseases in Illinois" just issued by the College of Agriculture, University of Illinois. The authors, Benjamin Koehler, the college's assistant chief in crop pathology, and James R. Holbert, of the U. S. Bureau of Plant Industry, outline certain measures, which, if carefully and consistently followed, may be expected to reduce losses from corn diseases.

Practices which they list as being important in such a program are:

1. Sanitation, that is, the removal of all old corn refuse from the field or the thorough plowing under of such refuse, so as to remove it from the surface of the ground. Such refuse carries spores which otherwise are scattered by the wind and reinfect the next crop.

2. Crop rotation, in order to prevent the accumulation of disease organisms in the soil.

3. Soil management, including proper tillage, drainage, and soil fertility, in order to provide conditions favorable to the vigorous and balanced growth of the corn plant.

4. Development of disease-resistant strains in open-pollinated and inbred stock by careful plant and ear selection for freedom from disease, for characters found to be associated with resistance to disease and for other desirable plant qualities.

5. Seed treatment in order to check seed-borne diseases and protect the kernel or young seedling against infection from the soil, especially when the environmental conditions are unfavorable for germination.

6. In addition to the above control measures, the germination test for vigor and freedom from disease usually is of value. In seed lots that have poor viability, a germination test of the ear is very important. The value of seed treatment and the germination test only partly overlap. Neither can entirely take the place of the other and each has advantages not covered by the other.

-M-

60 Per Cent Of What Eggs Cost Is Used Up In The Feed

Feed makes up 60 per cent, or almost two-thirds, of the total cost of producing eggs, according to H. H. Alp, poultry extension specialist of the College of Agriculture, University of Illinois. Hence, flock owners who take advantage of cheap mill feeds and grains and thereby reduce their feed cost to a minimum will find it easier to make a profit on eggs which must be sold for around 20 cents a dozen, he pointed out. A satisfactory home-mixed mash for hens or pullets can be made for a cost of about $1.65 a hundredweight on the basis of January prices, he said. It includes 195 pounds of ground yellow corn, 100 pounds of ground wheat, 100 pounds of ground oats, 100 pounds of meat scrap and 5 pounds of common salt.

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Put Up $10,000 Loan To Build Soils For Farm Relief

Putting its backing behind a new kind of farm relief program, the Salem Chamber of Commerce has raised a fund of $10,000 which will be loaned to Marion county farmers on easy terms so that they can buy limestone with which to build up their soils, according to a report by C. M. Linsley, soils extension specialist of the College of Agriculture, University of Illinois. The plan is being carried out under direction of Farm Adviser F. J. Blackburn, of Marion county, as part of the college's statewide project on limestone and legumes. He reports that farmers who have never used limestone before are spreading it for the first time under the new plan.

Farmed for year after year without clovers, land in that section has gone down in fertility to a point where profitable crop yields can no longer be grown, Linsley pointed out. These low yields and the accompanying low prices of recent years have not left many farmers with the cash to buy limestone.

Faced with this situation, members of the Chamber of Commerce realize that the business of their town is dependent to a large extent on the prosperity of their farmers and that this prosperity could only be brought about by building up the fertility of the farm land. The College of Agriculture, University of Illinois long ago had shown that the growing of legumes, such as sweet clover, red clover and alfalfa, is necessary to enrich the land, but that these crops can not be grown until the acid condition of the soil has been corrected by the use of limestone.

The $10,000 fund which has been raised will be loaned at 5 per cent interest, the farmer giving his note. One-half of the note is due in 2 years and the other half in 3 years. Farmers borrowing money from the fund sign a contract to apply limestone ccording to the directions of Farm Adviser Blackburn. They also agree to seed the land to some legume and promise not to sell any legume hay from the land unless the eceipts are used to pay off the note.

-M-

Lambs Sold Before July 1 Brought Premiums In 1930

If the 1931 lamb market is anything like the one of 1930 and those of many revious years, farmers can pocket a neat premium by getting early lambs ready for ale before July 1, according to W. G. Kammlade, assistant chief in sheep husbandry t the College of Agriculture, University of Illinois. Last year, he pointed out, arly lambs sold before July 1 brought a good premium over late lambs sold during the atter half of the year. Problems of summer management and many risks also were essened through the production of early lambs, he added.

"To bring a good price, early lambs must be fat and of good form and quality. hose weighing around 75 pounds generally are preferred. Breeding is an important conideration in obtaining such lambs, but good feeding and management must accompany it.

"For young lambs a ration which is hard to beat consists of 2 parts cracked orn, 2 parts ground or rolled oats, 1 part wheat bran and 1 part linseed or soybean il meal. Choice alfalfa, clover or leafy soybean hay should be provided with this. his ration may be hand-fed or self-fed. If it is self-fed it is advisable to cut or rind the hay, especially alfalfa or clover, and mix it with the grain, using equal arts of concentrate and hay. Little lambs cannot eat the course soybean stems. udgment on the part of the feeder is an important element in the results obtained."

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Illinois Apples Escape Worst Of Damage From Storage

Fortunately for Illinois growers, apples in this state escape entirely from some of the most serious diseases in storage and are relatively immune to most of the others, according to W. A. Ruth, associate chief in pomological physiology at the College of Agriculture, University of Illinois. The damage varies from year to year and therefore depends upon weather conditions. The exact relationship between storage diseases and the weather is complicated, however, and can not be defined exactly, he said.

Fungous diseases which may shorten the storage life of Illinois apples are blue mould, which causes most of the rotting of stored apples, black rot and brown rot. These rots usually do not enter sound fruit, so that their control depends upon the success the grower has in his spraying operations.

The most common non-parasitic diseases are scald, Jonathan-spot and stippen, or bitter-pit. Scald is the disease which turns the skin brown after the apples are taken out of storage. Jonathan-spot appears during harvest or soon after the apples are stored. Stippen is a spotting and shrinking of the flesh just beneath the skin. When it occurs it usually makes its appearance after storing. It is probable that scald takes part of the stored crop of Illinois-grown Grimes and York Imperials every year and that Jonathan-spot and stippen are factors every three or four years. Two other non-parasitic diseases, soft-scald and internal breakdown, have been known to cause serious damage to fruits from certain Illinois orchards, but only rarely.

Jonathan-spot, stippen and internal breakdown are more serious on larger apples than on smaller ones. The size of the fruit not only depends upon weather conditions, but also upon the age of the tree and the amount of pruning. Apples from young trees are most often affected. Heavy rains near picking time increase the probability of damage by Jonathan-spot and bitter-rot. Internal breakdown is increased by hot weather and consequent over-maturity during harvest. So far the occurrence of scald and soft-scald has not been definitely associated with any weather or orchard condition.

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One "School Day" Nets $3.30 A Hog For Some Farmers

Going back to school again only for a day has paid Illinois hog raisers profits which in some cases have run as high as $3.30 on every hog fattened, according to a report by E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. In a series of hog-feeding schools which the college is now holding over the state, Robbins has shown swine growers that an average saving of this much probably could be made by using an economical ration instead of the more expensive ones which some of the farmers at the schools have proposed. The saving to a farmer feeding out as many as 100 hogs would amount to $330, Robbins pointed out.

Twenty-three of the schools already have been held in the leading hog-raising counties and others are still to be held in 19 counties. Farmers have been crowding into them in large numbers. The benefits of swine sanitation and of balancing farm feeds with supplements supplying protein at a low cost a pound are being stressed. The most successful swine growers attending the schools are balancing their rations this winter with a mixture of 2 parts tankage, 1 part soybean meal, and 1 part alfalfa meal. At the schools already held many farmers have told of making their fall pigs weigh about 200 pounds at six months of age when they were fed this protein supplement with all the corn they would eat.

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The Extension Messenger

COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

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Hog Situation Brightens 1931 Illinois Farm Outlook

Illinois farmers face 1931 with the prospect of prices which will continue lower than the 1921-1929 average, but this will be partly offset by lower production costs owing to lower wages and feed prices, according to the annual state agricultural outlook report prepared by the College of Agriculture, University of Illinois. Some improvement in the present unfavorable business situation may be expected in the latter half of the year and this should lead to improvement in the domestic demand for Illinois farm products. The report adds, however, that improvement in foreign demand seems unlikely, because of low purchasing power, trade restrictions and increasing foreign agricultural production.

The brightest spot in the report is the prediction that with an average corn crop in 1931, hog producers are likely to find the corn-hog ratio favorable. The number of hogs is the smallest in ten years, with the exception of 1926, and storage stocks also are low. Export demand for pork, however, can not be expected to show much improvement in 1931 with large supplies still available in European countries.

The Illinois outlook report was adapted from the federal report prepared in a Washington, D. C., conference between representatives of the U. S. Department of Agriculture and 38 state agricultural colleges.

"If weather conditions permit the production of average yields of corn, oats and barley in 1931, larger total supplies of feed grains, particularly corn, will be produced than in 1930 with little recovery in prices likely. A shortage of hay is probable unless more than the usual amount of annual hay crops is provided. Increased seedings of red and alsike clover seem desirable and, more particularly, the harvesting for seed in 1931 of as much acreage as proves suitable for that purpose.

"Burdensome stocks of wheat and expanded production in the United States and other exporting countries give a prospect for continued low wheat prices in 1931. On the basis of probable demands for oil and meal, no increase in plantings of soybeans except for hay, appears justified.

"Compared with a year ago, 10 per cent fewer cattle are on feed, but supplies for slaughter late in 1931 probably will be larger than in 1930, especially supplies of underfinished grass cattle. The beef-cattle price cycle apparently has passed the peak, but some recovery in demand is likely after the middle of the year.

"Although some recovery from recent low prices for lamb is likely, increased supplies can be sold only at a price somewhat below the relatively high prices which prevailed before the recent drop. The number of sheep in the United States is now the largest in history.

"While decreased demand rather than an abnormally large supply has accounted for a large part of the drop in prices of dairy products, the present number of dairy cattle appears larger than is necessary to supply normal demands.

"Heavy holdings of shell and frozen eggs and good current production point to continued low egg prices during the first half of 1931. Smaller supplies both of poultry and eggs than in 1930 appear probable in the latter half of the year.

"The volume of apple production in Illinois is likely to show an upward trend during the next few years. Peach production both in Illinois and in eastern United States is apparently past the peak for the present cycle."

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Illinois Farmers Get 17 Millions From 1902 Finding

A discovery made almost 30 years ago by the College of Agriculture, University of Illinois, during the past year benefited farmers of the state to the extent of more than $17,000,000 at present commercial prices for nitrogen, according to figures compiled by soils and crops authorities of the institution.

In 1902, investigators of the college discovered that the general failure of alfalfa on farms of the state up to that time was caused by the absence of suitable nodule, or nitrogen-fixing, bacteria in the ground. With the introduction of the proper organisms into the soil, the acreage of alfalfa has gradually increased until 228,000 acres were grown in 1930. In addition, 793,000 acres of sweet clover grown in 1930 were dependent upon the same kind of bacteria for growth and development.

Valued even conservatively, these two crops "fixed" out of the air more than 84 million pounds of nitrogen and put it in the soil where it will benefit future crops. If bought on the open market, this nitrogen would have cost farmers in the neighborhood of $17,000,000. By growing it in legume crops, they got it at a cost of less than $2,000,000, leaving them a net of $15,000,000. Nitrogen is the greatest need of much of the farm land in Illinois and at the same time is one of the most expensive fertilizer elements when bought on the market.

The principle of inoculation also has benefited the state's soybean crop to the extent that the efficiency of production in the 1930 crop would have been improved by about three million bushels had the principle been applied to the entire acreage.

Although soybeans are not a complete failure in Illinois without inoculation, marked increases in yield and improvement in quality have come about as a result of this practice. On soils of medium to low productivity, increases of as much as 100 per cent have been observed, while even the more fertile soils have shown some increase. Since only about 10 per cent of the land in the state already contains nodule bacteria suitable for soybeans, 90 per cent of the crop or 620,000 acres, would have benefited by inoculation. Even if the increased efficiency of production were as low as five bushels an acre, the practice of inoculation, if applied to the 1930 acreage, would have meant about three million bushels more beans.

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592 Dairy Herd Owners Honored For Their Efficiency

Paced by J. A. Powell, Windsor, Shelby county, 592 dairymen in 63 Illinois counties this past year qualified their herds for the 300-pound honor roll certificate awarded by the National Dairy Association, it is reported by C. S. Rhode, dairy extension specialist of the College of Agriculture, University of Illinois.

Those eligible for the honor are limited to members of dairy herd improvement associations having herds of five or more cows that average 300 pounds of butterfat or better during the year. The Illinois dairymen honored this year represent about one-third of all those enrolled in the dairy herd improvement associations which the college is sponsoring throughout the state to further more efficient and profitable dairying.

McLean county, with two associations in operation, led the list with 37 members eligible for the honor. McHenry county was second with 26 and Stephenson county third with 24. Iroquois county topped the list for counties with only one association. Twenty-two out of a total of 26 members in that association had herds good enough to qualify for certificates.

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Vaccination Is New Hope In Coping With Fowl Malady

That fowls can be successfully vaccinated against the serious contagious disease of chicken pox, a practice which was first advocated in Holland, has been demonstrated during the past four years with encouraging results by the experiment station of the College of Agriculture, University of Illinois, it has just been announced. Success of the tests is made the basis for a new circular entitled, "Vaccinating Fowls for Chicken Pox," by W. A. James, assistant, and Robert Graham, chief in animal pathology and hygiene.

The experimental findings suggest that the malady might be reduced and possibly eliminated in many farm flocks, with consequent inestimable savings to flock owners, by immunization at the proper time, the circular reports.

Chicken pox, canker or avian diphtheria of fowls occurs most often during the fall and winter months and is manifest in a majority of infected flocks by yellowish diphtheritic patches in the mouth and throat. However, the comb and wattle, mouth and eye types of the disease all may occur in the same flock. The cause of the different types is identical.

Three methods of vaccination, swabbing, pricking and nicking, are described in the circular, but the warning is given that fowls to be vaccinated must be in vigorous condition and free from other diseases. Flocks that have never suffered from chicken pox or are unlikely to contract it should not be vaccinated. Immunity develop in four to six weeks following vaccination.

Pullets should be vaccinated before they begin to lay, the circular recommends. The vaccination reaction in laying flocks may check egg production and therefore should be avoided except in an emergency to check the spread of the malady.

A limited supply of chicken pox vaccine prepared by the college is being made available to qualified veterinarians for demonstration work.

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957 Illinois Farmers On Honor Roll For More Profits

Out to make $5 more a hog, 957 Illinois farmers in more than 20 counties already have put their names on the state honor roll of swine raisers and by the time the list is complete for the year there are expected to be close to 2,000 on it according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois.

Aimed at more economical pork production, the honor roll is a list of those farmers agreeing to cooperate with the College extension service and their county farm advisers in demonstrating upon their farms the two improved and recommended practices which make more money than any other kinds of hog business. These are the use of swine sanitation as fully as may be necessary to avoid having runt pigs and the balancing of home-grown rations with feeds supplying protein at a low cost a pound. These two practices may be safely assumed to add $5 to the net profit on each hog, Robbins reported.

At county hog feeding schools which the college is now holding throughout the state, many of the honor roll men have told of making their fall pigs weigh 200 pounds or more at six months of age by means of sanitation and economical feeding. Others have told of selling their March spring pigs in September weighing around 200 pounds just at the time of the year when the market usually is relatively high.

Vermilion county, with 57, now claims the largest number of honor roll swine raisers. Other counties with large lists are Piatt, Peoria, McDonough, Mason and Iroquois.

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Hill-Drop Plan For Fertilizing Corn Is Disappointing

Instead of increasing yields, commercial fertilizers applied to corn by the hill-drop method have actually reduced yields in a high percentage of trials made by the College of Agriculture, University of Illinois, indicating that the method is beset with many problems, according to L. B. Miller, assistant in soil experiment fields.

The tests were made during 1929 and 1930 and no doubt seasonal conditions were a factor, Miller explained. Complete fertilizers have almost always given larger early growth in the corn, but this has been followed, in a high percentage of trials, by an actual decrease in yield, he reported. The tests were made on many Illinois farms and showed a wide variety of results.

Broadcast applications of fertilizers commonly are used with good results where the land has been farmed in such a way that mineral deficiencies result. The more recent method of hill-dropping small amounts of fertilizer for corn gives a high concentration of fertilizer near the plant with a small acre application and tends to lessen fertilizer losses through soil fixation.

Comparisons made between the broadcasting and hill-dropping of a 5-15-5 commercial fertilizer here at Urbana showed a very slight advantage in favor of hill-dropping, but the average differences in the yields were not enough to be significant. Hill-dropping was compared with broadcasting the fertilizer both before and after planting the corn. The test was made across a series of plots of varying fertility so that the effectiveness on soils of different productivity could be studied.

Hill-dropping of fertilizer for late planted corn in 1929 gave very good results with increases of 12 to 15 bushels an acre, but showed very few significant increases with normal planting dates. Trials made cooperatively in 1930 in all sections of the state were disappointing. Out of 57 comparisons using hill- or row-dropped mixed fertilizer on previously untreated land, 30 gave increases and 27 gave losses compared with their check plots. The average increase was 4 bushels and the average loss 4.9 bushels an acre.

Hill-dropping of potash alone or with superphosphate was effective in practically all trials on alkali land and is recommended where corn yields are not satisfactory on such land.

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Culling Poor Cows Would Speed Recovery Of Dairying

Culling out the poor producing cows, many of which are not even paying for their "board and keep" under present prices, would speed up recovery of the dairy industry, in the opinion of C. S. Rhode, dairy extension specialist of the College of Agriculture, University of Illinois. While decreased demand, rather than an abnormally large supply, has accounted for a large part of the drop in prices of dairy products, there are more than enough dairy cattle now to supply even normal demands, he pointed out. During the time of higher prices for dairy products, many of the poorer cows made some money for their owners, but today they are failing to return even enough to meet the expense of keeping them.

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Pork Prospects Bright, But Sows Are Holding The Key

Hogs hold one of the few bright spots in the 1951 agricultural outlook and whether or not farmers cash in on this advantage depends a whole lot upon how their brood sows are fed during the last six weeks before farrowing, it is pointed out by W. E. Carroll, chief in swine husbandry at the College of Agriculture, University of Illinois. The bulk of the farrowing in Illinois comes in April, so that there is still time to correct faulty feeding, he added.

"The two most common defects in the winter ration of pregnant sows is a lack of protein and of some carrier of vitamin D. By farrowing time, a sow's appetite for protein should be thoroughly satisfied. Although tests have shown that soybeans may be used with success for this purpose, it may be a safeguard to supply some tankage or skimmilk, as these are known to be excellent.

"No matter what protein supplement is fed, a brood sow should get all the legume hay of good quality she will consume whenever pasture is not available. During lactation the sow should consume one-half pound or more of such hay daily. To make her do this, it may be necessary to grind the hay and mix it with other feeds. Coarse or discolored hay should not be used.

"Whether or not brood sows should be fed mineral supplements other than salt will depend upon the ration they are getting. Pregnant sows getting a gallon of skimmilk or buttermilk or one-fourth to one-half pound of tankage a head daily will need no additional mineral matter. Especially is this true if they are on pasture or are getting alfalfa hay. Rations composed entirely of seeds and grains, such as corn, oats and soybeans, should, however, be supplemented with a mineral mixture.

"For this purpose a simple mineral mixture which will meet the demands of the pregnant sow in almost all cases can be made from 2 parts ground limestone, 2 parts steamed bone meal or spent bone black and 1 part common salt."

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Cover Crops Not Manure Substitute For Truck Crops

Despite the fact that manure is harder to get and higher in price, it is not feasible to substitute cover crops for it in growing muskmelons, tomatoes and market sweet corn in a three-year rotation in the Illinois corn belt, according to the results of a six-year trial which the College of Agriculture, University of Illinois reports in a new bulletin, "Fertilizing Tomatoes, Sweet Corn and Muskmelons in a Three-Year Rotation." J. W. Lloyd, chief in olericulture, is author.

What can be done by truck growers, however, to meet the growing scarcity of manure is to use a system which is economical of manure. One such system worked out in the tests requires only 10 tons an acre once in three years instead of heavy applications every years.

Under this plan, manure and limestone are applied to the soil, starting with the melon crop. The next year, with tomatoes on the same land, steamed bone, dried blood or other commercial organic fertilizer is applied. The third year the sweet corn crop is grown without additional fertilizer, the residual matter from the two previous years being depended upon to supply the needs of the crop and save the expense of fertilizing. The cornstalks should be disked and plowed under in the early fall before the next rotation starts.

The quantities of other materials besides manure which are recommended as a result of the experiments are enough limestone to meet the requirements of the soil, 500 pounds an acre of steamed bone meal, 500 pounds an acre of dried blood or an equivalent amount of other organic nitrogen.

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Old Idea In New Form Is Used Now For Saving Soils

Recalling pictures which they have seen in their school books, many people still believe that the terracing which modern farmers use to prevent destructive soil washing is similar to that of ancient times, according to E. G. Johnson, farm mechanics extension specialist of the College of Agriculture, University of Illinois.

Illinois has about five and one-half million acres of land which are subject to serious erosion. Terraces are being used more and more to prevent disastrous losses of plant food and soil materials on such land. The college extension service has held terracing schools and demonstration in practically all counties of the state in which erosion is a serious problem.

The practice of terracing is as old as agriculture itself, but the type used now is vastly different from that of the early days. As practiced in ancient times, terracing consisted of building land up in a series of level areas separated by walls. This type is seldom used now, except in landscape gardening, as it hinders the operation of modern farm machinery.

The present type of terrace, called the Mangum terrace, consists of a series of low ridges built crosswise of the slope. The series of terraces built along the hillside catch the run-off water and carry it on slight grade to an outlet at the side of the slope instead of allowing it to wash gullies down the hillside. Mangum terraces are made wide with a broad base so that the ordinary farm crops and practices are handled the same as before.

The college recently has revised its circular No. 290, "Saving Soils by Means of the Mangum Terrace," in order to give farmers the latest information on the merits of them and methods of building them.

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Small Fruits Now On Up-Grade Since Hazards Overcome

Some of the hazards which have thinned out small fruit growing in Illinois during the past two decades have been overcome through research, and from all indications the industry is again to become common, it is reported by A. S. Colby, chief in small fruit culture at the College of Agriculture, University of Illinois.

"This is in line with the feeling that in the reorganization of Illinois agriculture to meet present needs, the production of horticultural products should play a more important part. In such a development, small fruit growing has certain advantages, such as reasonable initial outlay for plants, cultural requirements that are not too difficult and quick and profitable returns.

"Both local and distant markets for quality fruit are expanding rapidly. Even more important to consider is the fact, not generally recognized, that a patch of raspberries, strawberries and other small fruits may be cared for easily on a small piece of ground in connection with chickens, a vegetable garden and even a cow, a combination which will help to make a family self-supporting and pay big dividends in health and hapiness as well."

As a result of recent research work, sound recommendations toward overcoming the hazards of small fruit growing can now be made with respect to site of the plantation, soil, varieties, planting, cultural methods, pruning, spraying, and marketing, Colby said.

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San Jose Scale Survives Winter To Become A Threat

San Jose scale, one of the serious insects of Illinois orchards, has survived the present mild winter better than it has for a period of about ten years and unless it is controlled this spring by thorough spraying will do costly damage to fruit trees, according to a warning to the College of Agriculture, University of Illinois by W. P. Flint, chief entomologist of the Illinois State Natural History Survey.

A year ago the extremely cold weather killed most the scale and orchardists were saved thousands of dollars when they were told they would not need to apply dormant sprays to keep the pest in check. Such will not be the case this year, Flint warned.

"It is true that only 2 to 3 per cent of the scale survived the winter of 1929-1930. However, the dry, hot summer of 1930 was ideal from the standpoint of the scale. With an insect of this sort, having an extremely high rate of reproduction, a strong comeback can be staged in one season, even from a small start. In the fall of 1930, a light to moderate infestation of scale could be found in most peach and apple orchards in the state. With the continued mild temperatures of the present winter, a very large percentage of these scale insects have been able to come through in a vigorous condition. In fact, a greater percentage of scales are now alive than has been the case for a period of about ten years.

"Home-made lubricating oil emulsion or commercial oil sprays made by reliable companies are the most efficient and cheapest method of San Jose scale control. Lime sulphur also is effective if properly used, but is more expensive and much more disagreeable to handle."

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Illinois Farmers Warned Against Trying Trebi Barley

Illinois farmers, who are now growing about seven times as much barley as they did 15 years ago, should beware of a variety known as Trebi which has been brought in from the dry western states, it is announced by L. F. Rickey, associate in grain marketing technology at the College of Agriculture, University of Illinois. Even a small amount of this type will ruin the chances of a car of barley selling for malting or pearling purposes, uses which bring growers a substantial premium, he pointed out. For Illinois conditions, Wisconsin Pedigree No. 37 or No. 38 are recommended from all standpoints, Rickey advised.

Under western conditions, Trebi yields well, but here at Urbana in 1930 it yielded less than varieties which are much more desirable, Rickey reported. It made 49 bushels to the acre, as compared to 52 bushels for Wisconsin Pedigree No. 37. Tre has rough, barbed beards and dark, hard kernels. Better yielding varieties have smoo beards and bright, mellow kernels. One lot of Trebi hauled to an elevator may ruin several carloads for the high-priced uses, Rickey pointed out. Mixing of seed by threshing machines and other agencies would have the same effect.

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Illinois Now Grows Only Fourth Of Potatoes Needed

Illinois now produces only about one-fourth of the potatoes she uses, but by better cultural practices could very profitably grow more of them, according to J. J. Pieper, associate chief in crop production of the College of Agriculture, University of Illinois. The three outstanding barriers to better potato production in the state are poor seed, poor soil and failure to control insect and disease enemies of the crop, Pieper reported. It is suggested that northern-grown seed, either of the Irish Cobbler or Early Ohio varieties be used and that where possible, certified seed be planted.

Potatoes are adapted to a rich, sandy loam and do poorly on sand and on stiff clay laom. Barnyard manure applied to a good potato soil has given the most consistent and the highest increases of any fertilizer used in experiments at the college.

Potatoes do not need limestone, for they will do just as well on an acid soil as on a sweet soil. However, soils that are low in phosphorus will respond well to the addition of this element in an available form. Only on peaty soils or the poorer sandy soils will potash give marked increases in the yield of potatoes.

Yields have been materially increased where Bordeaux mixture and arsenate of lead have been used to control insects and diseases. On the average, these increases have been 33 per cent. Increases as large as 100 per cent in yield have, however, been obtained from spraying alone.

Spraying should be started as soon as the potatoes are six or eight inches tall and be continued for four or five weeks at weekly intervals. Arsenate of lead should be added only when chewing insects like the Colorado potato beetle are present. Bordeaux mixture, however, should be included in each application of spray or dust. It is highly important that the underneath side of the leaves be sprayed as well as the top surface.

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Herd Owners Can Now Make Good Buys In Dairy Sires

This is a good time for dairymen to buy a strong herd sire and build up the efficiency and profitableness of their herds, according to C. S. Rhode, dairy extension specialist of the College of Agriculture, University of Illinois. The demand for purebred bull calves has slowed up during the past year with the result that the supply is larger and better buys can be made, he pointed out. The practice of many farmers in cooperating with their neighbors in buying a bull should be encouraged, he elieves.

Bulls should be selected from cows with good records and preferably from ows that have produced good daughters. Many dairymen and breeders are members of llinois dairy herd improvement associations and have continuous records of their erds. Valuable breeding animals may be secured from such herds, Rhode said.

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Illinois Farmers Out To Make Most Of Pork Prospects

Illinois farmers apparently are out to make the most of the favorable rospects which are in sight for hogs during the coming year, it is reported by E. T. obbins, livestock extension specialist of the College of Agriculture, University of llinois. More than 100 local hog feeding schools were held in different communities hroughout the state during February in response to the popular appreciation of those reviously held by the college and county farm advisers, he said.

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More Strawberry Growing Safe During Next Two Years

There is a shortage of strawberry production in the intermediate states, which include Illinois, and growers might therefore expand their present plantings at a profit, in the opinion of R. S. Marsh, horticulture extension specialist of the College of Agriculture, University of Illinois. There is even room for some wheat farmers to practice a little diversification by planting a small acreage of strawberries, he believes.

The state agricultural outlook report just issued by the college shows that the production of strawberries in the intermediate states was 42 per cent less in 1930 than the peak yield of 1928. In 1930 with a larger acreage than the present one, strawberries sold for $4 to $6 a crate. In view of the present shortage, good prices should be had for the next two years, Marsh believes.

"Growers who follow the instructions as given in the college's circular No. 339, entitled, "The Strawberry Club Manual", should be able to produce 150 to 200 crates of berries an acre in a normal season.

"Good plants can be had at $4 to $6 a thousand and plant orders should be placed for this year within the next 30 days. Varieties most profitable for marketing in Illinois are Premier, Dunlap and Aroma.

"Success in getting high yields depends upon soil fertility. Five hundred pounds of commercial fertilizer that is high in superphosphate is not too much to use on each acre of berries where the soil is of average fertility. Strawberry plantings do exceptionally well when they follow a cultivated crop which has been preceded by sweet clover. A well-drained fertile soil so located as not to be susceptible to frost injury should be chosen for the patch."

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Small Start With Dual Cattle Ends In Farm Success

Thirteen years ago C. W. Stanley, a Clay county farmer, joined with two of his neighbors in buying a Milking Shorthorn bull for $300. Since then the dual purpose cattle which he has produced from this small start have financed the rearing of his family of 13 children and he now has 400 acres of land which has been made productive by cattle, limestone and clover, according to a report by E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois.

After he and his neighbors had bought the Milking Shorthorn bull, Stanley bought two cows for $200 each. Now he has about 40 of these purebred cattle. At fairs last fall the prizes they won netted $600 above expenses. In the last few years he has sold $6,000 worth of cattle. His wheat last summer yielded 35 bushels an acre. He is the only one in the county who has such a herd of cattle and his farm, his crops and his income show the result, Robbins said.

"At cattle feeding schools which the college recently has held in other counties, reports have been given of farmers who have prospered far beyond their neighbors when their one distinctive feature has been a herd of beef cows with enough milking capacity so that part of the cows raised two calves apiece and the other cows were milked. The monthly cream check and the income from fat yearlings have represented real returns from the land. Henry Raxton of Henry county improved and paid for a worn out farm in this way."

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1930 Began An Era In Which Prices Will Average Lower

There are some indications that 1930 farm prices which averaged lower than during the preceding nine years of 1921-1929 reflect the beginning of a new period during which the general level of prices will be lower than for the nine years. This is pointed out in a new bulletin No. 365, "Prices of Illinois Farm Products in 1930," which has just been issued by the College of Agriculture, University of Illinois. L. J. Norton, assistant chief in agricultural economics, is the author.

Prices of practically all commodities sold by Illinois farmers declined generally in 1930. This decline probably reflects in part the influence of the general downward trend in prices which began in 1920 and it is likely that it will be only partially recovered when business conditions improve and strengthen the general demand for farm products, Norton believes.

Only 5 of 21 major Illinois farm products were higher in 1930 than they were as an average of the previous nine years. These were the three related commodities, beef cattle, milk cows and veal calves and two horticultural products, apples and potatoes. All the other products were cheaper. Rye, wool and wheat were at the bottom of the scale, their 1930 price averaging only 71 per cent of the average for the nine years, 1921-1929.

Changes in prices of sheep products and cattle are largely cyclical, the bulletin explains, and then points out that sheep are now in the lower price part of their cycle and cattle in the higher price phase. Sheep prices may be expected to work relatively higher and cattle prices relatively lower as they move through their current cycles. The present decline in the rank of egg prices is probably largely cyclical also and in part is likely to be recovered as production is reduced in response to the relatively low price.

The decline in wheat is likely to be fairly permanent because of a tendency toward increased production in other countries. Improvements in the rankings of corn and hogs largely reflect the very short corn crop of 1930 and the relatively small corn crop of 1929, the bulletin explains.

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Calf Buyers' School To Benefit 1,500 In Dairy Clubs

Safeguarding the success of the 1,500 or more farm boys and girls who are members of dairy 4-H calf clubs in 73 Illinois counties will be the aim of a second calf buyers' school to be held at the College of Agriculture, University of Illinois on March 13, it is announced by C. S. Rhode, dairy extension specialist. Problems scheduled to be taken up at the school include finding suitable calves, prices of calves this year, evaluating them on the basis of production records of their dam and sire's dam, their breeding and type; kind of calves to select, avoiding losses from disease, shipping calves and handling them in transit, pointers in buying calves, feeding problems as related to the club heifer and fitting and showing the calf.

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Cost Alone Does Not Justify Illinois In Growing Wheat

It cost Illinois farmers about 90 cents a bushel to grow wheat in 1930, but this does not settle the bothersome question of what they should do with the crop even under present price conditions, according to R. H. Wilcox of the farm organization and management department, College of Agriculture, University of Illinois.

Other things besides costs must be considered in deciding whether wheat shall or shall not be grown on Illinois farms, he pointed out. A small-grain nurse crop such as wheat helps in getting the necessary hay and pasture crops started and also in a large part of the corn belt, there is less net expense in getting a new legume seeding where wheat is used than there is where other available small grain crops are used. Even on farms where a nurse crop is not always necessary, some straw is needed for livestock. As a feed crop, wheat usually produces more total nutrients an acre than oats and often more than barley. As a result, it can be used to good advantage in the livestock program.

Furthermore, Wilcox pointed out, the crop can be handled by labor and machinery when there is little productive use for this labor in any other field work. There might be good reason to leave wheat out of the rotation if the labor demands of the crop conflicted seriously with the demands of the more profitable corn belt crops such as corn and the legumes, he said.

It costs about 93 cents a bushel to grow wheat in the St. Louis wheat and dairy area, according to cost figures gathered by the college. Land there is valued at about $80 an acre and it takes approximately 12 man hours and 24 horse hours to grow an acre of wheat. Allowing 18 cents an hour for man labor and 9 cents an hour for horse labor and adding these to the other items of expense, an acre of wheat producing 18 bushels costs $16.75 in the St. Louis area.

In east-central Illinois where land varies in value from $125 to $175 an acre, it costs about 88 cents a bushel to grow wheat, according to figures kept by a group of farmers for the college. In that area it requires about 10 hours of man labor, 16 hours of horse use and an hour and one-half of tractor time to grow an acre of winter wheat. Under current wage rates of 25 cents a man hour, 10 cents a horse hour and 75 cents an hour for the tractor, along with other items of cost as they now exist, it takes $24 an acre to grow a 27 bushel wheat crop in east-central Illinois.

On the basis of these costs, 100 pounds of digestible feed in the form of wheat grain cost the southern Illinois farmer $1.95, or practically 80 cents a hundred less than oats. In the northern half of the state where land is higher and hired labor costs somewhat more than it does in southern Illinois, 100 pounds of digestible feed was grown at a cost of $1.85 in wheat, $1.50 in barley and $2.10 in oats.

"These are the comparative feed costs of the various grains without the straw. The actual feed nutrients of the straw accompanying the grain yields are practically the same for all of them. Where additional roughage is needed, however, oat straw probably is the most palatable of the small grain straws and the best straw to use as feed. Wheat straw is better adapted to use as bedding than as feed."

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Soils so rich that small grains could not be successfully grown on them actually prevailed in Piatt county when the early settlers came there, according to the Piatt county soil report just issued by the College of Agriculture, University of Illinois. Attempts to produce small grains were a failure because of the rank growth resulting in lodging of the oats and rusting of the wheat.

-M-

Devise Much-Needed Test For Use In Ice Cream Industry

A much-needed and invaluable test for the ice cream industry has been devised by investigators at the College of Agriculture, University of Illinois with the perfection of a rapid and accurate non-acid method for determining fat in ice cream. The work was done by C. R. Overman, assistant chief in dairy chemistry, and O. F. Garrett, first assistant, who report the results of their studies and explain the simplified technique in a new bulletin, "A Non-Acid Babcock Method for Determining Fat in Ice Cream," which has just been issued by the college.

In order that ice cream mixes may be quickly standardized and controlled, it is necessary to have an accurate and rapid method for determining the fat in ice cream. Most plants already have the regular Babcock equipment for testing milk and cream. Many procedures, some of which use the Babcock apparatus, have been developed for the determination of fat in ice cream. Most of these methods have been objectionable, however, because they have depended on the action of an acid or a mixture of acids for the liberation of the fat. The acid reacts with the cane sugar to form a fluffy, charred material which rises in the neck of the test bottle and interferes with the reading of the fat column.

Two hundred sixty-one different solutions using 11 chemical compounds were made up by the investigators in their search for some non-acid reagent or reagents which could be used to replace acids. The method as finally adopted requires two reagents. The first, called reagent A in the new test, is an alcohol-ammonia mixture, and the second, reagent B, is a solution of trisodium phosphate and sodium acetate in water.

Advantages of the new method are that it is fairly rapid, sufficiently accurate for commercial use, is inexpensive and permits a large number of determinations to be made concurrently. The operator, however, must become completely familiar with the procedure in order to be successful with it.

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Phosphate Widens Corn Margin By Eight Bushels An Acre

A wider margin of profit which could be obtained from much of the farm land in Illinois was secured by Oscar Cline, a Peoria county farmer, when he boosted the yield of corn on his farm eight bushels an acre through the use of rock phosphate, according to soils extension workers of the College of Agriculture, University of Illinois. The phosphate not only increased the yield but also hastened the maturity of the corn and improved its quality.

Phosphate was applied broadcast to half of the field before corn was planted in 1929. In 1930 the field was again in corn. The phosphated half made 47 bushels an acre with a moisture content of 27 per cent, while the unphosphated half made only 39 bushels with a moisture content of 31 per cent.

"Much of the soil in Illinois is low in available phosphorus. On such soils an application of phosphate is needed to produce good crop yields. A 50-bushel-an-acre crop of corn requires approximately 12 pounds of phosphorus. If there is only enough available phosphorus for 39 bushels of corn, then a 39-bushel crop is all that can be grown, even though there is enough nitrogen and other plant foods for a much larger yield.

"Other soils are high in available phosphorus, so that in most cases good clover crops which will supply nitrogen and active organic matter are all that are needed for good crop yields, providing, of course, that the soil is sweet. Much of the guesswork in using a phosphate fertilizer can be eliminated by first testing the soil for available phosphorus."

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The Extension Messenger

COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

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Cheaper Horse Power Brightens Outlook For Farmers

Prospects for farm profits in 1931 have been brightened at least a little by recent changes in the economic situation which, if they continue through the year, will cheapen horse power as compared with tractor power, it is reported by P. E. Johnston of the farm organization and management department, College of Agriculture, University of Illinois. This will operate to keep down production costs, a key point when the demand and price for farm products is at a low level, he explained.

"In the first place, feed grains are much cheaper than during the period prior to 1930 and this will reduce the carrying cost of horses. Feed cost makes up about 80 per cent of the total expense of keeping a horse. On the basis of present feed prices, the average feed cost for a horse in 1931 should be reduced at least 20 per cent below what it was in 1929 when it was $84 under central Illinois conditions. Up to the present time, there has not been a corresponding drop in the price of fuel for tractor power.

"One of the chief advantages claimed for tractor power is the saving in man labor, but this certainly will be worth less in 1931 than in the years previous to 1930. Monthly farm wages without board in the north central states decreased from an average of $51 in January, 1930, to $42 in January, 1931. Such a drop in man labor costs will minimize the value of economy in the use of man labor, which may be credited to the use of tractor power. Hence, in 1931 tractors will lose some of the advantage which they held prior to 1930.

"The open winter has enabled farmers to do much of their spring plowing so that there will not be the customary peak of work for the spring months. Here again, the tractor will lose the advantage which comes from working it a large number of hours a day during rush seasons.

"The fact that tractor power in 1931 will be in a less favorable position as compared with horse power does not mean that all farmers should use horses in 1931 or that all farmers should have used tractors in 1929. Each farm operator should choose that type of power which will give him the highest farm earnings and the choice will be influenced by local conditions."

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Four Crops Now Being Overproduced; Might Be Payers

Four horticultural crops besides strawberries have escaped the evils of overproduction and therefore might be grown profitably by more Illinois farmers, in the opinion of R. S. Marsh, horticultural extension specialist of the College of Agriculture, University of Illinois. They are raspberries, black walnuts, chestnuts and plums. Strawberries may be profitable only for the next two seasons, but for the other crops there seems to be no problem of overproduction in the near future. A grower in southern Illinois got $4.50 a case on the 1930 Chicago market for some plums of a common variety. Another grower in southern Illinois paid a tax bill of $155 with money from a crop of chestnuts on three trees.

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Adverse Weather Halts Westward Spread Of Corn Borer

Illinois corn growers are starting the new crop year with their dread enemy, the corn borer, still about 15 miles east of the state line, just opposite the eastern edge of Will and Kankakee counties. This is reported officially in a new circular entitled, "Drouth Checks Corn-Borer Advance in 1930," which has just been issued by the College of Agriculture, University of Illinois.

No further westward spread was made by the pest in 1930, while there was a marked reduction in numbers of borers in the more heavily infested areas, largely because of adverse weather conditions, the circular reports.

The statement of corn borer conditions at the beginning of the new crop year was prepared by W. P. Flint, chief entomologist of the Illinois State Natural History Survey; W. P. Hayes, associate professor of entomology at the university; G. H. Dungan, associate professor of crop production, and A. L. Young, associate in farm mechanics.

While the borer did not advance toward Illinois during 1930, the strategists point out, "There is no question but that the insect will be found soon in Illinois, if, indeed, it is not already in the state. Farmers in the eastern counties will be the first to feel the need of control measures. If serious damage is to be avoided, it will be necessary to adopt rotations and farm practices that will permit the plowing under or the burning of all cornstalks and weeds in and about cornfields by the middle of May each year."

Infestation was kept down, but yields were not increased in a three-year test which the college and the natural history survey made near Toledo to determine the merits of late planting in corn borer control, the circular reports. Forty-three different varieties of field corn and 12 strains of sweet corn were used in these studies. During the three years of the tests, corn borer infestations were not high enough to make marked differences in yields, despite the fact that the plots were located where the natural infestation was the heaviest of any in the corn belt.

One of the significant things brought out in the tests was that some varieties yielding consistently high had consistently low infestations as compared with other varieties, indicating that they have a marked corn-borer resistance or tolerance.

Back home, the advance defense work against the corn borer has been carried forward with the breeding of its natural parasitic enemies here at Urbana and the liberation of them at the rate of about 100,000 a month in the state, the circular reports.

-M-

Old Farm Home Is Transformed With Modern Plumbing

The old farm home in Knox county isn't what it used to be since J. Ross Baird, formerly an assistant in boys 4-H club work at the College of Agriculture, University of Illinois took over the place. One of the first things he did was to start modernizing the farmhouse by buying a water system and making arrangements for installing a septic tank, according to a report by E. G. Johnson, farm mechanics extension specialist of the college.

The septic tank which Baird installed was the Illinois type designed by the farm mechanics department of the college after careful tests had been made to work out the principles of septic tank construction and operation. Collapsible forms for the concrete work which were furnished by a lumber company made it possible for him to save $20 in lumber and labor and at the same time insured a good job. Baird got the necessary directions for building the tank out of the college's Circular No. 336, "Sewage Disposal Systems for the Farm Home." The Bairds now have a water system and bathroom and he reports that they are much pleased with the result.

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Sound Pruning Would Lengthen Life Of Apple Trees

The average apple tree in Illinois orchards lives only about one-third as long as certain individual trees, largely because it is not protected with "life insurance" in the form of sound pruning, in the opinion of V. W. Kelley, of the pomology division, College of Agriculture, University of Illinois. The average fruit grower has not given adequate attention to pruning practices and there is much difference of opinion and procedure in what pruning is practiced, he said.

"Lengthening the productive life of the tree by means of pruning depends primarily upon the formation of a good framework during the first three or four years after planting. Strength and permanence of branches should be kept uppermost in the mind of the pruner. If branches with weak crotches are allowed to develop, a part of the tree likely will break down under a heavy load of fruit or during a windstorm in the very prime of its productive period and after the grower has cared for it for perhaps 15 to 30 years. If too many framework branches are chosen, the head will become so crowded at maturity that some of the branches will be shaded out or will have to be cut out in order to admit light to the interior of the tree for proper coloration of fruit.

"Such large wounds whether caused by breakage or the pruning out of superfluous or unproductive branches expose the heartwood of the trunk to wood-rotting fungi which will shorten the life of the tree. Rapidity of the healing process also is important in decreasing the possibility of infection. Hence, pruning practice should aim toward the removal of smaller rather than large branches. If relatively large branches must be cut out, it should be done while the tree is young and vigorous when healing will be most rapid.

"Splitting down of framework branches and the necessity of cutting out large branches in the bearing tree may be largely avoided if proper attention is given to the establishment of the framework in the beginning. Limiting the number of framework branches is of first importance. Four or five branches arising from the trunk will form an adequate bearing surface. These branches should have relatively wide angles since upright branches do not form strong unions with the trunk. Such a framework will not break down and the head will not become so crowded as to necessitate the removal of large branches near the trunk late in the life of the tree."

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Better Methods Are Being Sought By Growers Of Grapes

A stimulated interest in Illinois grape growing is reflected in the fact that more requests than ever before are being made for information on correct pruning and training practices, it is reported by A. S. Colby, chief in small fruit culture at the College of Agriculture, University of Illinois. To yield good crops, grapes must be pruned every year. The work is best done before the buds swell. However, it is better to do it even after that rather than not at all. The temperature should be above freezing. Tying should follow at once before the canes are broken by the wing.

For all ordinary conditions, the four-cane Kniffin system is recommended, but the six-cane probably will give the best results if the vines originally were planted too close in a fertile soil or if the variety is a strong grower. The four-cane system consists of a two-wire trellis with wires about three to five feet above the ground on which the fruiting canes are trained in both directions. The extra wire necessary for the six-cane system should be about a foot and a half above the one just below it.

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Production Costs Mislead Unless Whole Story Is Told

These are times when agriculture may be done an injustice and farmers are likely to be misled by figures on cost of production which do not tell the whole story, it is pointed out by H. C. M. Case, head of the farm organization and management department of the College of Agriculture, University of Illinois.

Cost figures are misleading as to agricultural conditions in general and as to what farmers can expect on their own farms unless they are computed so that the product involved carries a fair share of all costs, he explained.

"A strong talking point is made of low costs of production when prices of farm products are low. However, the problem of keeping costs low is not solved by considering only the cost of a single product. The best basis for getting reliable cost data for the production of any farm product is a record of all costs of the entire farm properly distributed to each product. It is on this basis that the farmer must meet his costs of operation.

"Charges for the use of the land, for instance, while one of the largest costs from the standpoint either of farm owner or tenant, frequently are disregarded in presenting cost data. An interest charge on a fair value of the land and buildings comparable to the interest rate on mortgages is justified. The cost of producing a crop, as an owner-operator might figure costs, should include interest on the land, which he would receive as rent if he rented the farm to another. A tenant should charge all of his own costs against his share of the crop, since the share going to the landowner represents a return for the use of the capital invested in the farm.

"Other items which must be included in the cost of producing crops are man labor, which should include all family labor devoted to the farm work valued on the basis of what it would cost if hired; power costs, including all costs of keeping horses and the interest, depreciation and upkeep expenses of mechanical power; machinery and buildings, including interest, repairs and depreciation; taxes; seed, fertilizer, harvesting costs and other special crop expense, and overhead costs covering farm expenses which do not pertain directly to any one enterprise but must be distributed to all productive enterprises. These overhead costs usually amount to $1 to $3 an acre on crop costs under Illinois conditions.

"In general it is unfair to present costs of a single product when a rather complete farm record has not been obtained for the entire business. Likewise, when farm costs are being interpreted, they should be considered in the light of a record from the entire farm business showing total expenses and income."

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Dates for the meeting of the American Institute of Cooperation about which some question was raised during the January Conference of Farm Advisers are June 8 to 13 and the meeting will be held at the Kansas State Agricultural College, Manhattan, Kansas, it is announced by J. C. Spitler, state leader of farm advisers.

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Good Seed Would Add Up To $1,000 To Farm Incomes

Most farmers could increase their net farm incomes as much as $100 to $1,000 a year by changing to high-yielding strains of seeds that produce crops of good quality, in the opinion of M. L. Mosher, of the farm organization and management department, College of Agriculture, University of Illinois. This is evident from a study of a five-year record of farm incomes and farm practices made in connection with the farm bureau-farm management service which the college is conducting among farmers in Livingston, McLean, Tazewell, and Woodford counties in central Illinois, he said.

The added income could be secured with little expense regardless of whether the farm operator was a tenant or landowner or was in poor or good financial condition, according to Mosher.

In the central Illinois area where much grain is sold from the farm, differences in crop yields have consistently accounted for more of the differences in incomes between farms than any other of the important factors, Mosher reported.

"About five bushels an acre more corn and oats and relative increases with other crops were secured one year with another by those men who were using strains of seed recognized as high-yielding than was secured by the average of those who continued with other kinds of seed. Many of the most successful farmers are on the alert to find some strain of corn, oats, barley, wheat or soybeans that will yield more grain of a good quality than that which they already have.

"A very few dollars spent for a bushel of good seed corn or for a few bushels of small grain seed will give a start with the best strains available. By planting such seed on good, clean ground, a farmer can save seed enough for the entire crop the following year. Any farmer wishing to get good seed may well learn from his county farm adviser where he can get such seed suitable for the conditions in his locality."

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Farm Operating Costs Are Still At Their 1913 Level

Even with all the many improvements in equipment and farm practice, the total acre cost of producing farm crops is not very different today from what it was 18 years ago, according to H. C. M. Case, head of the farm organization and management department of the College of Agriculture, University of Illinois. Less man and horse labor are used with the modern methods, but machinery costs are higher.

This situation, he said, now has added significance when the watchword of farmers must be low costs. Whether or not farmers can justify the buying of expensive equipment will depend upon the relative cost of man and horse labor to the cost of large-size, modern machinery. This is especially true in the case of the medium-sized farm. Recent changes in the prices of things farmers buy and sell will force farmers to put off expensive purchases until a better price relationship exists between the two groups of commodities.

"Hundreds of farmers who still owe notes for expensive purchases may well wish they had deferred buying. Other farmers who have bought equipment more wisely to meet the needs of economical production have profited from their purchases. With corn now selling for practically half what it has brought within the past year, it takes twice as many bushels to buy an article that has not been reduced in price. Especially is this a burden, for instance, on farms that are too small to justify the purchase of large-sized and expensive equipment for which they have limited use."

-M-

Find Wide Range In Soil Response From Treatments

Different Illinois farm soils vary so widely in their response to fertilization that a treatment which is worth $14.10 an acre in more efficient crop yields at one point in the state is actually worth $1.30 an acre less than nothing at another point, according to A. L. Lang, associate in soil experiment fields at the College of Agriculture, University of Illinois. This is revealed by results from the last rotation period on the soil experiment fields which the college maintains over the state, he said.

This extreme variation was recorded in the case of rock phosphate, which was used at the annual rate of one-fifth ton an acre a year. When it was used in combination with residues, the annual acre value of the crop increases which rock phosphate produced was $14.10 at one point in the state, while at another point in the state this amount of phosphorus was applied at a loss of $1.30 an acre. When it was applied in combination with manure, it was worth all the way from $5.41 an acre at one point to a loss of 93 cents an acre at another point.

Manure which is now profitable on every soil experiment field in the state produced annual crop increases which varied all the way from a value of $1.42 an acre on yellow mature soil at Unionville to $10.31 an acre on sandy land at Oquawka.

Residues, including mostly cornstalks, second-growth clover and sweet clover, produced annual crop increases valued at $7.63 an acre at Bloomington, while at McNabb the annual acre loss from the use of residues was $1.66. These two fields represent dark-colored soils, the former being a semi-mature type with heavy, non-calcareous subsoil and the latter a young type with open, non-calcareous subsoil.

Limestone, when applied with manure, fluctuated in annual acre returns from $16.22 at Ewing to 6 cents at Minonk. These two fields represent the extreme in soil types, Ewing being an old, gray soil with impervious non-calcareous subsoil. Minonk is a very young, dark-colored soil. When applied with residues, limestone did not show so great a spread in value, although it was more uniformly effective. In the residue system, it increased in value from 55 cents an acre in Antioch to $11.94 at Aledo.

Potassium, used on the upland soils, showed the same extremes in response but most of the gains were made on light-colored, older type soils.

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Baby Chick Trend Promises Better Times For Poultrymen

Some improvement in poultry and egg prices in the fall of 1931 as compared with 1930 should follow in the wake of the present marked tendency toward conservative buying and ordering of baby chicks, it is believed by F. E. Elliott, of the poultry husbandry division, College of Agriculture, University of Illinois.

Only 50 per cent as many chicks were hatched in January, 1931, as were hatched in January, 1930, according to the report of commercial hatchings just released by the federal bureau of agricultural economics. Furthermore, Elliott pointed out, orders on hand for chicks to be delivered February 1 or later were 42 per cent less than bookings at the same time last year. The number of eggs set in January was 40 per cent under last year, which indicates lighter February hatchings than in February, 1930. It must be remembered, however, that January and February are not the most important months from the standpoint of number of chicks hatched and therefore no over enthusiastic expansion should be made on the basis of the figures, he said.

"Further promise of future improvement in the poultry industry is seen in the fact that retail prices of eggs in the large cities have been more reasonable during 1931 and consumption to date for this year is much heavier than last year. If reports continue to show heavy decreases in hatching, there is reason to expect better times for the poultry raiser next fall. Poultrymen should watch these reports carefully, especially if they have decided to reduce the size of their flocks for the coming fall and winter."

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Plan To Reclaim Vast Illinois Area With U. S. Forests

A half million acres of Illinois land which now is not even paying taxes will be returned to production if a project outlined by the College of Agriculture, University of Illinois and the forestry division of the U. S. Department of Agriculture materializes, it is announced by E. A. Norton, assistant chief in soil survey mapping at the college.

Two national forest units would be established in the rough and broken areas in seven southern Illinois counties under the plans of the project.

The nature and extent of marginal lands in southern Illinois is a problem in land utilization which is so far beyond the individual land owners' power to control that it demands state and national intervention, Norton pointed out. There are hundreds of thousands of acres of land there which can no longer be made to return a profit to their owners under the prevailing systems of management, he reported.

"In somewhat less than a hundred years, the superficial, easily-exhausted wealth which was in these soils when man first settled there has been dissipated. The trees were cut down and the sod plowed up, exposing the surface of the soil to erosion. Crops were sold off and nothing returned to the land. Once these soils became unproductive, it was impractical to build up some of them because of limiting features in their environment and because of the inherent character of some of the soils themselves.

"Excessively high or low temperatures, too much or too little rainfall and unequal moisture distribution throughout the growing season are some of the climatic factors which operate in southern Illinois to limit crop production. Unfavorable surface relief, both steep lying slopes and flat lying lands, limit crop production. Extremely plastic surface soils, highly acid reactions and drouthy substrata are other characteristics which make some of the soils of the region submarginal. Many of the soils lack a good constitution owing to their advanced old age, making them inefficient, both chemically and physically, as producers of general farm crops."

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Illinois Farmers Bought More Fertilizers During 1930

Fertilizer purchases made last year by Illinois farmers topped those of 1929, despite the stress of economic conditions, according to figures compiled by E. E. DeTurk, chief in soil technology at the College of Agriculture, University of Illinois. The 1930 total was 42,132 tons, 3,064 more tons than were bought in 1929 and 11,623 more tons than in 1928, he reported. Limestone and rock phosphate figures which are not yet available were not included in the totals. Ranking first in the 1930 purchases were mixed fertilizers with a total of 33,123 tons. Superphosphate was second with 5,464 tons and pulverized animal manure third with 1,314 tons. Bone meal, with 676 tons, was the only one of six other fertilizers of which more than 500 tons were bought.

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Cattle Men Push Drive To Stamp Out Worst Herd Evil

Spurred on by current business conditions, 501 Illinois dairymen and beef cattle breeders have enrolled their herds, which total 13,258 cattle, in the campaign which the College of Agriculture, University of Illinois is waging to control and suppress Bang's disease. It is an infectious breeding trouble held to be the worst profit-killer in Illinois cattle herds. Those enrolled in the campaign are located in 75 different counties. The campaign is being conducted as a regular project of the college experiment station and is in charge of Dr. Robert Graham, chief in animal pathology and hygiene.

The cleanup of the disease has progressed to the point where 38 herds have been accredited as free from it by the Illinois State Department of Agriculture, while 51 practicing veterinarians engaged in Bang's disease control have demonstrated their ability to apply the necessary blood test in an efficient manner.

"At prevailing prices of dairy products, infected herds are lower producers than non-infected herds, other factors being equal," Dr. Graham explained. "In good dairy cattle the average loss from the effect of the disease is about $50 a year a cow in milk yield alone, not to mention the value of the calf, as well as udder and breeding troubles that may follow in the wake of the disease. Competitive prices of dairy and beef cattle breeding business demand lower production costs which can be met with clean healthy herds.

"More and more Illinois dairymen and farmers are profiting by having their local veterinarians test their herds and carrying out the plan of temporarily isolating infected animals or sending them to the butcher. During the past month alone, 38 additional herd owners enrolled their herds in the project. The blood test which is used in the project is as reliable in detecting animals infected with Bang's disease as the tuberculin test is in diagnosing tuberculosis.

"In addition to the clean herds which already have been accredited, there are many others making progress toward accreditation. Dairymen and farmers can not afford to perpetuate this disease in their cattle. Furthermore, in the light of recent findings, it is now recognized that occasionally man may suffer from undulant fever as a result of handling infected animals or of eating infected animal products."

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Soy Growers Risk Yields And Profits In Heavy Seeding

Illinois farmers, who grow more soybeans than those in any other state, are risking yields and profits when they plant the crop thicker than 120 pounds, or two bushels, of seed an acre, it is reported by C. A. Van Doren, assistant in crop production at the College of Agriculture, University of Illinois. Seeding the crop at thicker rates than this lowered the yield, reduced the number of pods a plant and delayed the maturity of Illini soybeans in rate of seeding studies made last year by the college, he said.

In seasons when the rainfall is about normal, such as in 1928 and 1929, Illini soybeans drilled at rates of more than two bushels an acre gave an increase in yield about equal to the amount of excess seed used. In 1930, however, when the rainfall was abnormally low, the yield was cut approximately 100 pounds an acre for each 50 pounds increase in rate of seeding. In the test, Illini soybeans have been drilled in 8-inch rows at rates varying from 90 to more than 240 pounds an acre.

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Low Corn Prices Reflect A Record Low Consumption

Reduced consumption is one reason for the lowered corn prices of the past winter and it will tend to have the same influence throughout the year, it is pointed out by L. J. Norton, assistant chief in agricultural economics at the College of Agriculture, University of Illinois. Operating along with this factor to hold down corn prices has been the general tendency toward a lower level of prices for commodities in general, he added.

Estimates recently released by the federal department of agriculture on quantities of corn left on farms indicate that the amount of corn consumed this winter was less than in 1929-1930 and less than the average of the previous five years. About 1,450,000,000 bushels of corn had been used this year up to March 1 as compared with 1,700,000,000 bushels in 1929-1930 and 1,830,000,000 bushels as the average of the past five years.

Factors tending to lower consumption have been a slack commercial demand caused by reduced demands for corn products and some substitution of cheaper grains, the consumption of about one billion bushels more oats, some increase in the quantity of wheat fed, somewhat fewer hogs, and less intensive cattle-feeding operations, the natural tendency to economize a short crop, shortage of funds with which to buy feed in some sections and the open winter which has reduced maintenance requirements. Most of these factors will continue to reduce consumption until a new crop is grown.

Typically, in short crop years the high spot in corn prices has come in early winter--December or January. This has been followed by a recession which is again followed by another higher market that culminates in early or mid-summer. The high point so far this winter came in early January. Although comparatively low, the price registered at that season is the peak for the winter.

The carryover of corn on farms was reported on March 1 to be about 710,000,000 bushels this year. This is 280 million bushels below the 1930 figure and 340 million below the average of the past five years. Stocks of oats and barley are the equivalent of about 40 million bushels of corn larger than last year.

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If This Old Mare Could Only Write A Testimonial!

If horses could give testimonials, a 23-year-old Percheron mare on the farm of Charles Walker & Son of DeWitt county would have one worth thousands of dollars to the soybean crop, according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. She has eaten soybean hay for the past 20 years of her ripe old age and thrived on it. So have the other horses on the farm, for that matter. She still continues to do her share of work with the younger horses in the field and keeps in good flesh and high spirits.

This and other experiences of the Walkers with soybean hay are good news to many farmers whose young clover was killed out by the drouth of 1930. They can still have a good high protein hay by using soybeans this year for that purpose. In addition to feeding soybean hay to their horses, the Walkers also use it for milk cows. Carle C., the junior member of the firm, believes that they could get along very well with all of their stock, even if they never had any hay excepting that from soybeans. They have no fault to find with it.

They started making soybean hay 20 years ago and during most of that time have had no other hay on the place. Some years a little timothy has been cut in the pasture, but this has been a small amount in the total supply.

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The Extension Messenger

COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

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Much Dead Seed Found In Corn; Farmers Are Unaware

Contrary to what might have been expected, Illinois has a seed corn problem this spring and farmers should therefore guard against taking chances with seed, according to J. C. Hackleman, crops extension specialist of the College of Agriculture, University of Illinois.

A high percentage of badly diseased and dead seed corn has been discovered at corn culling meetings which the college recently has held in different parts of the state, he reported. The amount of dead seed is particularly noticeable in northern and northwestern Illinois, but diseased seed of low vigor extends over most of the central part of the state. The danger lies in the fact that farmers generally are not aware of the condition, most of them being confident that their grain is of high quality because of the favorable weather during the past harvesting season.

"Especially those farmers who are depending upon seed selected at husking time should make sure that their corn is of good quality. This means making a germination test or at least a thorough check of the stock."

Ten per cent dead corn was found in 171 10-ear samples at a recent corn show in McDonough county, Hackleman reported. There is much corn picked at husking time in which at least one third of the grain is proving unfit for seed. Last year 10 per cent of 200,000 ears tested on the McDonough county germinator was classified as No. 1 seed, which means that it was practically disease-free and of high vigor. Corn of a similar quality this year does not exceed 5 per cent of that tested and practically all of that comes from early picked and racked dried seed.

Findings which have recently come to light in different parts of the state confirm indications which came out at the annual Illinois Seed Grain and Utility Corn Show held at the college in January. Corn from northern Illinois showed 5.6 per cent dead seed and 4.7 per cent weak, that from central Illinois 1.7 per cent dead and 7.9 per cent weak, while that from southern Illinois showed 1.4 per cent dead and 7.6 weak.

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Six Million Acres In Southern Illinois Not Paying

Vast though it is, that half million acres of southern Illinois land which would be included in the two proposed federal forests is but a small part of the available marginal land, according to E. A. Norton, assistant chief of the soil survey of the College of Agriculture, University of Illinois. Six million acres in southern Illinois no longer return a profit under present management and are almost completely hopeless except for timber growing, he reported. The project for the establishment of two federal forests on a half million acres of the area was drawn up by the college and the Illinois State Natural History Survey.

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Land Ruination Could Be Halted By Planting Locust

Almost every county in Illinois has thousands of acres of land that are being made worthless by the washing away of soil on steep slopes. Erosion on such rough land can be controlled by planting black locust seedlings six to eighteen inches high before their buds begin to open in the spring, according to L. E. Sawyer, forestry extension specialist of the College of Agriculture, University of Illinois and the Illinois State Natural History Survey. One-year-old seedlings for this purpose can be obtained from nurseries throughout the state. April is not too late for planting them if they have not yet started to grow.

Black locust trees not only will prevent further washing but also will add nitrogen to the soil. With the soil thus improved, a sod will be formed in a few years and this will aid in preventing further erosion. Within two or three years the root systems of the young trees will have developed so that they will hold even the steepest slopes in place.

Spacing of the black locust seedlings will depend upon the steepness of the slope and the severity of the erosion. On land that is very steep or that has eroded until the gullies are large, the young trees should be spaced about four feet apart each way, while on more gentle slopes four by six feet is close enough. On still more level areas, six by six feet will do.

The trees need not be set in regular rows, but should be bunched at strategic points. Whether in rows or groups, they should be planted so that they will be closest together on the steepest slopes. In addition to those set on the bottoms and sides of gullies, at least two rows of trees should be planted around each gully where the land has not yet broken.

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Home Vegetable Garden Has New Importance This Year

Farmers in doubt as to how they can increase their 1931 income can't go wrong by growing a good home vegetable garden, in the opinion of J. W. Lloyd, chief in olericulture at the College of Agriculture, University of Illinois.

Last year some Illinois farmers got as much as $150 to $225 worth of vegetables from half-acre gardens which they planned and handled according to the college's recommendations, he reported. This year even the government has recognized the importance of a good garden as a means of helping a farmer get and keep out of debt, he said. There is a provision that all applicants for loans from government funds for production purposes in drouth-stricken areas must agree to plant a vegetable garden large enough to feed their families.

"The farmer who grows plenty of vegetables for his own table may not only reduce his cash outlay for table supplies but also is likely to reduce his expenses for medical service. Such saving of expense, of course, is equivalent to increasing income.

"Expenditures for food make up a large percentage of the family expenses in an average household. Many farmers have larger cash outlays for this purpose than would be necessary.

"Vegetables are much more valuable as food than is apparent from the carbohydrates, protein and fats they contain. They are among the best sources of vitamins, are rich in mineral salts and add needed bulk to the diet. It is true that the mineral salts needed by the body might be taken in the form of medicine and the vitamins supplied by yeast and cod liver oil. However, vegetables furnish these materials in much more agreeable form."

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Farm Folks Plan To Trade Views Before Saturday Night

Farm people in 302 Illinois communities aren't going to wait for the Saturday night street corner sessions to exchange views, judging from plans which they have been making during the past four months.

A total of 704 officers and leaders from these 302 communities attended 34 county conferences on local organization held by the extension service of the College of Agriculture, University of Illinois. D. E. Lindstrom, assistant in rural sociology, was in charge. How to plan meetings and programs and what policies to make for local group organizations were the live topics of the conferences. Farm and home bureaus, farmers' clubs, community clubs and councils and subordinate Granges were represented.

Farm people like to talk about the things concerning them every time they get together, Lindstrom pointed out. Small groups of farmers can be found on the street corners of almost every trading center on any Saturday night. In some communities these are the only kind of discussion groups farm people have. This will not be true, however, in the 302 communities represented at the recent conferences.

Waning popularity of meetings planned purely for social purposes was evident at the conferences. "There are too many social activities now," was a common complaint. "We want the opportunity to learn more about the forces affecting the business of farming and farm life," was a popular demand. Programs for local meetings also must be carefully planned at least six months at a time, it was brought out at the conferences. A program committee of three or five acting for a year was decided upon as the best way to make such plans.

Farm people are most interested in problems dealing with group organization and hence such topics are among the best that program committees can select for discussion at regular monthly meetings of community clubs. This was revealed by a poll of the 704 representatives who attended the 34 conferences. Other popular subjects were the economic outlook for agriculture, problems in production practices, cooperative marketing and buying, taxation and public spending, farm credit and home improvement.

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Hog Raisers Bag Higher Prices With Improved Methods

Higher hog prices than will probably prevail later in the season are now being pocketed by Illinois' honor roll swine raisers as a premium for their improved methods, according to a report by the extension service of the College of Agriculture, University of Illinois. These honor roll hog producers, of whom there are hundreds scattered throughout the state, have been following the college's recommendations and consequently are marketing their fall pigs much earlier than the average. Many fall pigs usually go to market in June at prices lower than those prevailing during March and April when the faster growing fall pigs are ready for sale, it was pointed out.

Recommended methods being followed by the honor roll swine raisers in order to make their pigs grow fast at low cost include sanitation and the balancing of corn or other grains with a reasonable amount of suitable feed having a low cost for each pound of protein. No other plan seems to equal this in making fall pigs grow as fast as do spring pigs raised under the best of conditions.

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Nitrogen Builds Up Orchard Efficiency Cheaply

Efficiency of yields in many Illinois apple orchards could be improved as much as six to nine bushels a tree at a cost of no more than 15 to 20 cents through use of commercial fertilizers in the spring to supply needed nitrogen, according to R. S. Marsh, horticultural extension specialist of the College of Agriculture, University of Illinois.

This was demonstrated in experiments which the college conducted last year in an orchard of 31-year-old Winesap trees growing in bluegrass sod in Calhoun county, he reported. Trees given six pounds of nitrate of soda yielded an average of 22 bushels of fruit each, while untreated trees yielded only 13 bushels. Ammonium sulphate, calcium cyanamide and a commercial product gave increases almost as large as this. It was the fifth season of fertilizer treatments in the orchard.

Within the past ten years, since commercial forms of quickly available fertilizers have been used in sod mulch apple orchards, this system of soil management has been the most practical one to use in thousands of orchards, according to Marsh. The system has proved profitable on apples, peaches, cherries, plums and bramble fruits.

About two weeks before bloom, the fertilizers are applied at the rate of one-fourth pound for each year of the tree's age. They are broadcast under the branches of the trees or used as side dressing for bramble fruits. It is not necessary to cultivate them into the soil, as the first shower dissolves and leaches them into the ground.

"The cost of frequent cultivations is eliminated and the erosion of soil on rolling ground is prevented by this system of soil management. However, shallow discing is advised every two or three years and a legume should be used as the sod crop. Also in some sections of Illinois, orchards can not be seeded down to a soil-building crop or sod before they are five or six years old because of the danger of injury to young apple trees from the buffalo tree hopper. To prevent such injury, it is necessary to cultivate young orchards in western and northern Illinois during May and June. Orchards south of St. Louis and Olney are not bothered to any great extent by the buffalo tree hopper.

"Even though they are cultivated, young orchards can be treated to good advantage with nitrogenous fertilizers. Last year, in Johnson county, for instance, a three-year-old peach and apple orchard treated with a commercial nitrogenous fertilizer made an excellent growth in spite of the dry season and a sweet clover crop which was almost as high as the trees themselves. Each tree had been treated with one to two pounds of fertilizer at the beginning of the growing season. These results are further evidence that lack of available plant food is more likely to be the limiting factor in growth and production than is moisture."

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Strike At Worst Pest Of Horses in Extensive Drive

One of the worst pests of horses is expected to be less of a nuisance this year than for many seasons as a result of campaign which the College of Agriculture, University of Illinois and cooperating veterinarians have waged against the bot fly in eight central Illinois counties. A total of 8,461 horses and mules belonging to 1,090 owners in Ford, Logan, DeWitt, Champaign, Tazewell, McLean, Iroquois and Livingston counties were treated by 18 veterinarians.

Contrary to common belief, it was revealed in examinations made by Dr. W. P. Hayes, university entomologist, that the predominating pest is not the nose fly but the throat fly. In buzzing around the heads of horses and mules to lay their eggs, these two flies so unnerve the animals that they often become unmanageable. The pests usually are worst in the hot weather of July and August. Shields frequently placed over the noses of work animals are unsatisfactory because they make breathing difficult. Eggs laid on the throats and in the noses of horses and mules hatch into bots which find their way to the stomachs and sap the vitality of the animals. Infested horses are hard to keep in flesh and consequently run up big feed bills. The bots also cause chronic inflammation of the stomach, commonly manifested by systems of colic.

The campaign against the pest was started in the Beason community of Logan county at the suggestion of Roy Staats, a farmer who had interested Farm Adviser J. H. Checkley in the possibilities of controlling the fly. The 8,461 horses and mules were treated at a cost of 50 cents a head with carbon disulphide administered in a capsul. The treatment was given during January so that the bots would be dislodged and passed out of the animals to perish before warm weather. When horses are not treated, the bots pass out during the warm weather, burrow into the ground and change into the fly stage which lasts only for a few days while the eggs are being laid.

The campaign was conducted on a community basis and was so well received that in some districts as high as 95 per cent of the horses and mules were treated. While some relief from the fly nuisance is expected this summer, it may take as long as five years of community treatment to eradicate the fly from any district.

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Corn Pest Will Take Damaging Toll In Third-Year Corn

Corn planted a third year on the same ground may be so badly damaged by the northern corn rootworms that the amount of "down" corn which nearly always produces chaffy, light, poor-yielding grain will be doubled over what it was the second year. This is reported in a warning to the College of Agriculture, University of Illinois by J. H. Bigger, assistant entomologist of the Illinois State Natural History Survey. Corn should not be grown more than two years in succession and better only one year on the same field, except in the greatest emergency, he said.

Examinations by Bigger reveal that the rootworm increases in numbers each year in a field where corn is planted two or more years in succession. It also was found that the amount of down or fallen corn increases in proportion as the number of rootworms increases in the field.

As a four-year average in first-year corn there were nine beetles to 25 hills of corn and 5.5 per cent of it was down. Second-year corn averaged 49 beetles to 25 hills with 17.8 per cent of the corn down. Where corn was grown a third year on the same field, there were 118 beetles to 25 hills and 32 per cent of the corn was down.

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Few Illinois Farms Profiting From Rotations That Rotate

Although most farms consistently earning more than the average have a definite cropping system, or rotation, very few of all farms in the state have rotations that rotate, according to R. R. Hudelson, extension specialist in farm organization and management at the College of Agriculture, University of Illinois. In this respect, crop rotations are too much like the weather. There has been a lot of talk about them for years, but not much has been done about them, he said.

Definite crop rotations are comparatively rare because, for one reason, they require planning ahead, which is altogether too uncommon especially on farms with one-year leases. Another reason given by many farmers is that rotations can not be kept up because such crops as clover and winter wheat often fail.

"Despite this, many consistently successful Illinois farmers maintain rotations. There is one successful farm in east central Illinois, for instance, on which a five-year rotation of corn, corn, oats, wheat and clover has been maintained for 16 years. Wheat and clover failures have not happened often because the soil has been kept with a good supply of organic matter, nitrogen, phosphate and lime so that the weather has to be severe to kill a crop. Failures have occurred, however, about once every five years.

"This has not broken up the rotation, because plans already were laid for such an emergency. Oats were substituted for wheat serving as a nurse crop for clover which thus came right back into its place in the rotation. The clover and timothy mixture had not failed completely until 1930, but the plan followed when either a partial or complete failure of this crop took place was to disc into the field in early spring a mixture of oats and clovers. This supplied pasture although not so early nor abundant as the second-year clover when it was available. It has served the purpose, however, and can be followed by corn without breaking up the crop rotation and thereby losing the advantages of systematic, efficient, low-cost production so greatly needed in a period of low prices."

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Vegetable From Italy Wins Fame Quickly In The U. S.

Still practically unknown in America as late as 1925, Italian green-sprouting broccoli probably has been more quickly and widely accepted in American gardening than any other introduced plant, according to Lee A. Somers, vegetable gardening extension specialist of the College of Agriculture, University of Illinois. Six years ago there was a commission merchant on the famous South Water market in Chicago who did not know the name of the plant. In 1928 this same merchant was selling many cases of it daily and in 1930 he sold more than two carloads in one day in its season. It is now found in nearly every grocery store handling green vegetables.

Unlike cauliflower with which it is most frequently compared, Italian broccoli is very easy to grow. It is vigorous and rugged. The spring crop is grown exactly like early cabbage, the plants being started in a greenhouse or hotbed and taken to the field as soon as danger of killing frost is past. The heads are harvested as soon as they reach full size and before any of the flowers have opened. The second crop which consists of small secondary heads is ready to harvest a week or ten days later.

The fall crop may be planted directly in the field. In central Illinois July 5 to 10 has been the most favorable date. This crop is ready in late September, October and early November.

Broccoli has become so popular in Illinois that most of the gardeners enrolled as cooperators in the college's home vegetable garden project will raise it this year.

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Disease Killing Many Spring Pigs Is Pre-Natal Anemia

Some Illinois farmers have lost all their spring pigs and others report unusually heavy mortality from a disease which appears to be pre-natal anemia, characterized by thin, watery blood, according to Dr. Robert Graham, chief in animal pathology and hygiene at the College of Agriculture, University of Illinois. One farmer lost all the pigs farrowed by 14 of his sows, while a dozen other cases of heavy loss have been reported to the laboratory.

Heavy mortality from the disease probably is accounted for by a shortage of pastures for breeding sows during the late summer, fall and winter, as a result of the drouth, it is believed.

One precaution against further losses might be to keep sows yet to farrow on pasture, it was recommended. If anemia threatens in pigs that are two to three weeks of age and they get chaffy, fat and lazy, it will be advisable to get them on the ground. If weather prevents doing this, the next best thing will be to get clean dirt and sod from a place where hogs have not been kept and put it in the pens where the pigs are confined. However, pre-natal anemia strikes so early in life so that effective prevention apparently must be applied before birth.

"Although anemia has been seen in newly born pigs for a period of years, it never before has been common enough to be a serious economic problem. In the recent losses reported to the college, healthy appearing sows farrowed pigs that seemed normal for about 24 hours only to sicken and die in two to four days. Symptoms of anemia were found in pigs examined from different herds. However, it can not yet be said that the disease is a primary anemia in all herds. Bacterial infections which normal pigs can throw off may complicate the illness and hurry death.

"No cause has been established, but the best clue at present is that the disease is associated with methods of management. In two affected herds where all of the pigs died shortly after birth, the sows had been kept in dry lots and allowed very limited pastures. Better fall and winter pasture for sows might prevent the disease on some farms. Anemia in older pigs, two or three weeks of age, is associated with confinement on wood or concrete floors. The most rational way to handle any type of nutritional anemia, on the basis of present knowledge, is through proper management. This includes giving breeding sows good pasture before and during gestation and getting the pigs out on the ground as soon as possible. If weather keeps them inside, clean dirt and sod should be put in their pens."

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Tests Prove One Theory Of Leaving On Corn Suckers

One more argument to support the old conclusion that it is wiser to let the suckers stay on the corn plant has come out of an experiment made by the College of Agriculture, University of Illinois, it is reported by George H. Dungan, associate chief in crop production. The test demonstrated clearly that under certain conditions the sucker may be a factor in how the main stalk yields. Whether or not suckers figure very importantly as feeders of the main plant under ordinary conditions is yet to be determined.

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Drouth Creates Heavy Demand For Emergency Pastures

Extensive damage done by the drouth of last summer has put emergency pastures and meadows in heavy demand this spring, says J. J. Pieper, assistant chief in crop production at the College of Agriculture, University of Illinois. Much of the red clover and sweet clover seeded for pasture or hay as well as the permanent pastures and meadows were killed out, he reported.

Oats and barley, field peas and winter vetch and rye grasses are the emergency forages which can be seeded early and harvested about the time small grain is cut, Pieper said. These crops can be pastured about six weeks after seeding. Late emergency crops which are seeded about corn planting time and harvested late in the summer or fall include the millets, of which the German, or Golden millet, seems to do best in Illinois, soybeans, cowpeas and Sudan grass. These also can be pastured about six weeks after seeding.

"Among the early emergency forages, the combination of oats and winter vetch yielded best in Illinois experiments when the oats were sown at the rate of 32 pounds an acre and the vetch at 25 pounds. The average yield for the past five years has been about two and one-fourth tons of hay an acre. Field peas and oats have yielded a little more than two tons of hay an acre. Rye grass and winter vetch yielded one and three-fourths tons, the grass alone about one and three-fourths tons, and rye grass and peas about two tons.

"When it comes to costs, one of the cheapest of the early emergency forages is a small grain, such as oats or barley. Oats probably are a little better than barley. The combination of oats and peas will cost a little more than $5 an acre for seed, oats and winter vetch about $3.50, rye grass and peas about $6.25, rye grass and winter vetch $5 and rye grass alone about $4.

"Soybeans and Sudan grass is a combination which has been grown for late emergency forage on the college farm for a period of years. Soybeans seeded alone have yielded a little more than two tons of hay an acre. Soybeans and Sudan grass seeded at the rate of 10 pounds of Sudan grass and about 1 bushel of soybeans have yielded more than three and a half tons of hay an acre. Sudan grass seeded alone at the rate of 20 pounds an acre has yielded slightly less than the combination with soybeans. The millets, both alone and in combination, have not yielded as well as the Sudan grass.

"Millet probably is the cheapest late emergency forage, costing about $1 an acre, but it also is the poorest. The next cheapest is Sudan grass, which will cost about $1.75 an acre. The combination of Sudan grass and soybeans will cost about $3 an acre. The millet and soybeans will cost $2.50 an acre or more. Soybeans alone will cost $2 to $2.25 an acre.

"Sudan grass is the best pasture in this group of late emergency forages. The best combination for hay probably is Sudan grass and soybeans, unless the soybeans are wanted alone."

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House Plans Are "Best Buy" Ever Made By This Farmer

The best investment a prominent Illinois farmer believes he ever made was for architectural service in building his home. This is not unusual, says W. A. Foster, rural architecture specialist of the College of Agriculture, University of Illinois, because the wastes which are avoided will more than pay for the architectural service. As the farmer put it, "From the plan I knew how the house would appear, that the plan would suit our needs and best of all, what the house would cost." Cost of the service was reasonably low, being less than the cost of the plumbing system, the light plant, a heating plant or water system.

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Corn Has Added Quality If It Is Made To Yield Better

One reason yields figure so prominently in corn profits is because quality of the grain usually improves as yields go up, according to L. B. Miller, assistant in soil experiment fields at the College of Agriculture, University of Illinois. This has been brought out during the past four years in a detailed study of corn quality made on six experiment fields operated under the various soil and climatic conditions of the state. Plots given the better kinds of soil treatment yielded a higher percentage of sound, well-developed ears of higher quality than did untreated plots.

All the fields are operated under a permanent system of soil fertility which includes a good rotation, the use of animal and of green manures with and without limestone and in addition with rock phosphate and potash. A proven corn variety well adapted to local conditions was used in each case. The harvested corn was sorted into nubbins, immature, rotten and good corn. Although hard to make, this classification was consistent in showing higher percentages of sound, well-developed ears on the better treated plots. Definite quality factors of test weight, percentage of water-free shelled corn and percentage of moisture at husking time also were recorded.

Of these quality factors, moisture at husking time and percentage of water-free shelled corn are highly significant. Moisture at husking time averaged 3.4 per cent higher in the corn from untreated land than it did in the corn from the best-yielding fertilized plots, the range being from 25.9 per cent on the untreated check plots down to 22.5 per cent on high-yielding ones.

From the untreated check plots an average of 87 pounds of ear corn were required at husking time to make a bushel of No. 2 shelled corn, while on the best yielding plots only 79 pounds were needed. The most extreme case of this kind was found at Newton where one year 124 pounds of untreated check plot corn made a bushel of No. 2 shelled corn, while only 80 pounds of corn were required to produce a bushel on the plot fertilized with manure, limestone and rock phosphate.

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Produces 81 Tons Of Pork At A New Rate Of Success

Setting a mark for other big-scale hog raisers, R. V. McKee, a Marshall county farmer, produced 10 carloads of hogs weighing more than 81 tons with a high average in all factors indicating success, according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. For one thing, his economy in the use of feed was nearly equal to the average of 43 smaller-scale hog raisers although he raised five times as many hogs as they did. It is universally recognized that freedom from runts and general health and thrift of the herd are hard to maintain in a big-scale hog business, Robbins explained.

McKee's porkers had a total weight of 163,500 pounds. He is one of the honor roll swine raisers of the state who are following the recommendations of the college of agriculture and attributes his success largely to strict sanitation and to economical feeding.

Sixty spring litters and 30 fall litters netted 652 pigs with only 2 runts. The pasture was 30 acres of mixed clover. The pigs made an average gain of 35 pounds a month from birth until they were sold and ate 10,681 bushels of corn, 590 bushels of oats and around 19 tons of tankage, 10 tons of linseed meal, 4 tons of alfalfa meal, and 20 tons of middlings. McKee produced each 100 pounds of pork with 366 pounds of corn, 41 pounds of oats, middlings and alfalfa and 35 pounds of tankage and linseed meal, making a total of 442 pounds of feed. The average of 43 smaller-scale hog raisers who kept similar records was 415 pounds of feed to produce 100 pounds of pork.

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Low Costs Will Aid Soybean Growers Over Low Prices

Illinois soybean growers, who in 1930 produced 75 per cent of the country's commercial soybean seed crop, face the prospect of continued low prices for their 1931 output, but can protect their profits somewhat by cutting production costs to a minimum, according to J. C. Hackleman, crops extension specialist of the College of Agriculture, University of Illinois.

One way of growing the crop cheaper, the department says, is to make sure that the seed bed is properly prepared and then use cultivating machinery which will cover the ground rapidly. A rotary hoe, a harrow or a weeder will cover considerably more ground in a given number of hours than a corn cultivator and if used at the right time will keep down weeds in row-planted beans as well as in those which are drilled. Other cultural practices which will influence yield and quality of seed and, therefore, have a direct bearing upon economy of production are relatively earlier planting, thorough inoculation, use of good, sound seed of high-yielding varieties, keeping down weeds and, finally, harvesting and threshing the crop so as to save all the seed produced.

Farmers in the corn belt are planning to increase their soybean acreage this year almost 28 per cent over what it was in 1930, the increased acreage going largely for hay purposes to replace legume hays and forages lost in the drouth of 1930. For two reasons, farmers who are going to seed soybeans for hay in the central and north central portions of Illinois should use varieties commonly grown for seed purposes rather than make special efforts to get those varieties generally used for hay, Hackleman said.

In the first place, seed of locally adapted varieties is much cheaper than that of the hay types. Demand for the strictly hay types, which are adapted and which should be used exclusively on the light soils of southern Illinois where the greatest loss of last summer's forages occurred, is going to be so great that prices for seed of these varieties will be materially above the price for seed of varieties commonly grown in the corn belt. The farmer who is planning to grow a soybean hay crop in the central and north central sections of the state will be helping himself as well as farmers of southern Illinois if he will use seed of the Illini, Manchu and Dunfield for hay.

In the second place, varieties of soybeans which are available and which will make satisfactory hay on the dark soils of central Illinois are unadapted for the light soils of southern Illinois. Seed of varieties adapted to that southern area is limited and any great demand for those hay varieties by farmers in the corn belt will almost certainly result in advances in price. Therefore, it should be reserved insofar as possible for use where it will be of the most benefit this year and at a price which will not have a tendency to restrict its use where it is so badly needed, Hackleman pointed out.

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Get New Clue To Control Of Worst Disease Of Peaches

A new clue to the control of bacterial spot of peach, which growers regard as their most serious disease enemy, has been uncovered in research work which the College of Agriculture, University of Illinois has been doing on this problem for the past twelve years, it is announced by Dr. H. W. Anderson, associate chief in pomological pathology. It has been found that the cankers in which the causative bacteria overwinter are more abundant on the succulent water sprouts than on the main branches of the trees. Hence, removal of these water sprouts during the winter will aid in controlling early infection, Dr. Anderson reported.

Bacterial spot is the only peach disease which can not be controlled by a proper spray. It not only mars the fruit, but also causes serious defoliation and thereby saps the vitality of trees. In efforts to work out satisfactory control measures, the college has secured experimental orchards in southern Illinois and at Urbana to test a number of promising spray materials. Laboratory and field studies of the disease also are being made throughout the year to establish facts concerning its life history and resistance to chemicals used in sprays. Varieties thought to be resistant to the disease are observed each season and records made of the amount of infection.

As far back as 1925, investigators of the college established an important point in the life history of the disease when they proved that the organism could live over the winter in fallen leaves. Additional work was started last year to find out whether or not the causative bacteria could overwinter in any other way than this. Previously, the failure to find definite cankers and the absence of the organism in cultures from buds and twig surfaces led to the conclusion that most infections in the spring originated from old leaves.

In the new work started last year, however, some definite cankers of a type never before observed were found in great abundance on water sprouts. The organism was isolated from these during the spring and summer. Furthermore, the early leaf infections were traced to these cankers in a number of carefully controlled observations. Whether or not the general appearance of cankers in the spring of 1930 was due to unusual weather conditions has not yet been determined. The investigations will be continued through another season to study this point.

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Dairyman Makes 20 Times As Much Off Five Less Cows

Making 20 times as much off of five cows less was the feat put across by John Strunk, a Tazewell county dairyman, after he had gotten rid of five low-testing and low-producing cows from his herd of 21 and fed the remaining 16 according to the way they were producing, it is reported by C. S. Rhode, dairy extension specialist of the College of Agriculture, University of Illinois.

Strunk's results demonstrate what could be accomplished by culling the low-producing cows from all Illinois dairy herd, Rhode pointed out. There are an estimated 1,007,000 head of producing dairy cows in Illinois with an average extimated production of 4,703 pounds of milk a cow. In contrast, the average cow in Illinois dairy herd improvement associations produces approximately 7,621 pounds of milk. In other words, Rhode explained, 621,430 dairy herd improvement association cows could replace the 1,007,000 average cows and just as much milk would be produced. Furthermore, on the basis of dairy herd improvement association records, the 621,430 dairy herd improvement association cows would return approximately $19,000,000 more above cost of feed in one year than the 1,007,000 average cows.

-M-

Failure To Meet Market Demands Cuts Pork Profits

Despite the fact that they could be making about $1.45 more a hundredweight, many hog producers give little or no consideration to the demands of the pork trade, according to Sleeter Bull, associate chief in meats at the College of Agriculture, University of Illinois. At present feed prices, it costs about 45 cents a hundredweight more to produce a 350-pound hog than it does to make a 200-pound one. Furthermore, Bull pointed out, the market usually will pay a premium for a light-finished hog. At the present time, good to choice butcher hogs weighing 180 to 200 pounds are quoted in Chicago $1 a hundredweight higher than hogs of the same quality weighing 290 to 350 pounds.

"While the pork consumer is not as discriminating as the lamb or beef consumer, he will pay a premium for small, lean, firm, juicy and tender cuts, particularly chops, bacon and ham. Unfortunately, these characteristics do not go hand in hand. The size of the cut depends largely upon the size of the hog. Tenderness is determined by the youth and fatness of the hog. Firmness and juiciness also are the result of fattening. This would indicate that a young, fat hog of light weight would furnish cuts which satisfy the consumer. Unfortunately, hogs do not fatten sufficiently at light weight to guarantee firmness and juiciness of meat. This is particularly true of hogs of the so-called big type.

"The problem becomes even more complicated when one considers that the housewife almost invariably demands lean cuts of pork. Obviously, the producer can not supply all lean cuts from a large fat hog, nor can he supply firm juicy cuts from a small thin hog. The best thing is to supply a hog which will furnish cuts of a proper firmness, juiciness and tenderness, but which is no larger and no fatter than absolutely necessary to guarantee the quality of the meat.

"A hog of intermediate type if properly fed will be finished at 200 to 225 pounds. Such a hog will furnish reasonably small cuts of excellent quality without excess of fat."

-M-

Even Corn Would Not Pay If Treated Like Timber Is

Farmers can expect more profit from their timber when they quit doing things to it that they would not do to other money crops, according to L. E. Sawyer, extension forester of the College of Agriculture, University of Illinois and the Illinois State Natural History Survey. Turning horses, cattle, hogs or sheep into timber, a rather common practice, is practically the same as turning them into a field of half-grown corn or other grain. Burning over timber land is just as harmful as burning the weeds and grass out of a corn field, Sawyer said.

"Clean cultivation is ideal for most other crops, but is not ideal for timber. The more leaves and underbrush there are on the ground, the better will be the growing condition of the soil. Contrary to general belief, burning the woods destroys only a very small percentage of insects and snakes and is harmful both to the soil and to the timber.

"Many farmers in Illinois have found that proper handling of their timber is making it a very profitable part of their farms. Proper management does not involve a lot of labor or expense but consists only in keeping stock and fire out of the woods, cutting properly and marketing to the best advantage. Pasture produced in timber has very little value and therefore is of no great importance to the stock. Consequently, most owners of profitable tracts of timber keep stock out of their woods. Neither do they practice burning and when fire gets started they do everything they can to put it out as soon as possible."

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The Extension Messenger
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Soybean Has Unusual Possibilities As Feed Supplement

Since most corn belt grains are short on protein, and soybeans contain more of it than any other crop commonly grown in this area, the soybean has unusual possibilities as a home-grown supplement to other grains used for livestock feeding, according to a new circular just issued by the College of Agriculture, University of Illinois. "Utilizing the Soybean Crop in Livestock Feeding" is the title of the circular. It includes statements by different staff members on the value of soybeans for dairy cattle, beef cattle, sheep, horses, swine and poultry.

During the past ten years soybean production has expanded faster than outlets for the crop through commercial and feed channels have developed. As the rate of expansion declines and the demand for seed becomes less, the bulk of the crop must find an outlet through oil mills and as a feed for livestock, the circular points out. The possibility of the crop being utilized either as hay or as a concentrate makes it a double servant of the livestock industry. Proper understanding of both the possibilities and the limitations of this crop as a livestock feed will add to its appreciation in the corn belt.

Soybean hay is high in protein and lime content. It is recognized as an excellent roughage for dairy cows and beef cattle and breeding and fattening sheep, as well as for work animals and growing colts. As a home-grown nitrogenous concentrate, the seed of the soybean has been fast gaining in favor. It is a valuable source of protein for dairy cattle, beef cattle and sheep and also for brood sows. Soybean oil meal is an excellent protein supplement for all classes of swine, for dairy cows, beef cattle, sheep and poultry. The seed and therefore the meal is short in minerals and consequently it is advisable in swine feeding and absolutely necessary in poultry feeding to add a simple mineral mixture to the rations when using either the seed or the oil meal.

No method has been discovered for feeding soybeans to market hogs without lowering the quality of the pork, but soybean oil meal is a promising protein supplement for growing-fattening swine. These and other conclusions of a five-year experiment carried on by the College of Agriculture, University of Illinois are reported in a new bulletin, "Effect of Soybeans and Soybean Oil Meal on Quality of Pork," which has just been issued by the college. Authors of the publication are Sleeter Bull, W. E. Carroll, F. C. Olson, G. E. Hunt and J. H. Longwell, members of the college animal husbandry staff, who conducted the experiment. Soft pork, which is discounted by packers, has increased in northern markets coincident with the increase in soybean production in the corn belt. The experiments to overcome any faults of soybeans were made because of the advantages of using a home-grown protein supplement in the hog rations.

-M-

Farmers' Spirit Is Unbroken Despite Lowest Earnings

Although the incomes of Illinois farmers in 1930 dropped to the lowest level in nine years, their spirit of never giving up has not been broken, according to R. R. Hudelson, extension specialist in farm organization and management at the College of Agriculture, University of Illinois.

"Compliments are due Illinois farmers for the spirit with which they continue to take the punishment of the agricultural depression, continuing as it has for 10 years and made more severe than ever in 1930. I have visited from 500 to 600 Illinois farmers on their farms every summer for the past five or six years. When they have been floored, the big majority, in fact, nearly all of them have been able to smile. They have picked themselves up and tackled the job again with a fine spirit and a determination to find a way to better success."

An analysis just being completed on 2,300 records kept by farmers in the college's standard farm accounting service reveals that the account keepers last year averaged about 1 per cent return on their capital. This is not as bad as in 1921, when account keepers in central Illinois suffered an actual net loss, Hudelson reported. However, the rank and file of farmers probably did have a net loss last year. Account keepers make higher earnings than average of all farmers, their advantage usually amounting to about 2 per cent of the total investment, or nearly a thousand dollars a farm for central Illinois.

The average farmer's actual net loss on last year's operation means that after he had been allowed only $600 to $720 for wages, he did not earn anything to pay interest on such capital as he had borrowed, to say nothing of paying interest on his own capital invested in the business. To make the situation worse, Illinois farmers have had ten years of conditions which have made it hard to lay by any reserves to tide them over years of drouth and depression such as last year.

While some sections suffered less than others from the drouth all areas of the state felt the effects of the severe decline in agricultural prices which took place in 1930 and continued into 1931. Of the common Illinois farm products, perhaps the one which resisted the 1930 price avalanche as well as any was hogs. The price of them remained relatively higher than that of feed grains. The heavy hog-producing sections of the state showed relatively higher farm incomes than the grain-selling areas.

-M-

New Type Leaflet Given Poultrymen As Housing Help

Seeking to help Illinois farmers swell their poultry profits through better housing, the College of Agriculture, University of Illinois has just issued a new type circular which is a combination blueprint and direction sheet for the Illinois 20 by 20 foot shed-roof poultry house. It is printed on a large sheet, 12 by 18 inches, which is folded twice to give the publication the appearance of the standard 6 by 9 college circular. The inside of the large sheet contains the blueprint and the outside the directions and bill of materials. The new aid to better poultry housing was prepared by E. G. Johnson, farm mechanics extension specialist, and H. H. Alp, poultry extension specialist.

One Illinois farmer keeping his hens in the type of house which is recommended in the new circular got an average profit of $2.44 from each of them in one year. Properly built and managed, the house has always proved very satisfactory. Among the features are an 8-inch concrete foundation wall and a 3-inch concrete floor. One of the worst thieves of poultry profits in Illinois is the dirt floors which are still used in far too many chicken houses, the specialists say.

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"Nameless Nuts" May Disappoint With Lack Of Quality

With an increasing interest in the growing of nuts in Illinois, it is more important than ever to be on guard against buying unnamed seedlings, says A. S. Colby, chief in small fruit culture at the College of Agriculture, University of Illinois. Since nut varieties do not come true to type from seed, it is necessary to buy budded or grafted nursery trees from reputable nurserymen or to work over seedling trees with wood of a named variety. Nut trees are harder to propagate than most other fruit trees and are, therefore, more expensive. It does not pay, however, to buy unnamed seedlings expecting to get quality fruit, Colby pointed out.

Some of the better known species such as the black walnut, chestnut, butternut, hickory, pecan and hazelnut are native to Illinois and are found widely distributed in localities favorable to their culture. While some of these species are valuable only for their wood, which is used for many purposes, an occasional specimen tree is found bearing nuts of larger size than usual and often with other good characters, such as better cracking quality or meat of better flavor, than the ordinary run. Some of these seedling trees have been named and propagated as new nut varieties. In a few cases, new varieties. In a few cases, new varieties have originated through breeding. Such varieties include the Thomas, Stabler, Ohio and Stambaugh black walnut; the Boone, Fuller, Gibbens and Champion chestnut; the Indiana, Busseron, Butterick, Niblack, Green River, Witte, Campbell and Oberman pecan, and the Jones and Winkler hazelnut.

The English walnut and the so-called paper shell pecan are not recommended for general planting in Illinois, owing to unfavorable climatic and soil conditions. The Witte, Campbell and Oberman pecans, originating in Iowa, are suited for planting in northern Illinois.

-M-

Cheaper Feeding Nets Farmer $600 More On 102 Hogs

E. A. Rediger, a McLean county farmer, is ahead $600 because he used the plan of economical feeding as recommended by the College of Agriculture, University of Illinois on 102 of his hogs last year. He reported a feed cost of $6.80 a hundredweight, while a neighbor who tried straight corn had a cost of $9.40, or $2.60 more. This would amount to $5.85 on each 225-pound hog.

A saving of $2.50 or more on the feed cost for each 225-pound hog is not unusual for farmers who have adopted the college's plan of economical feeding, according to E. T. Robbins, livestock extension specialist. It involves balancing the corn or other grain with suitable feeds having a low cost for each pound of protein.

Records which 61 hog raisers kept for the college in 1929 included 42 farms on which the economical plan of feeding was practiced. These farms used only 399 pounds of feed to produce each 100 pounds of pork. The 19 farms with more expensive but less suitable rations used 453 pounds of feed to produce each 100 pounds of pork at a cost of fully $2.39 a hog more than the 42 farms.

Further evidence that the plan of economical feeding cuts costs to correspond with the best farm practice was brought out at 21 county hog feeding schools held by the college during the past winter, as well as in the 1929 records from the farm bureau-farm management service in Livingston, McLean, Tazewell and Woodford counties. It was figured that there was a saving of $3.19 a hog between the plan of economical feeding as recommended by the college and the more expensive rations reported by men attending the hog feeding schools. A total of 380 farm records in the farm bureau-farm management service showed that the feed costs for 100 pounds of pork ranged from $6.87 on the 76 most profitable farms to $8.29 on the 76 least profitable farms, a difference of $1.42 a hundredweight or $3.21 on each 225-pound hog.

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Profitable Soil Treatments To Be Shown On 17 Fields

How to get more profitable small grain and hay crops through use of various fertilizers and systems of soil treatment will be explained to farmers in a series of meetings to be held on 17 of the soil experiment fields operated in different parts of the state by the College of Agriculture, University of Illinois, it is announced by F. C. Bauer, chief in soil experiment fields. Each of the meetings will start at 1:30 p. m.

The schedule follows:

May 19 - Odin, Marion county
May 20 - Enfield, White county
May 21 - West Salem, Edwards county
May 22 - Oblong, Crawford county
May 26 - Clayton, Adams county
May 27 - McNabb, Putnam county
May 28 - Mt. Morris, Ogle county
May 29 - Joliet, Will county
June 9 - Carlinville, Macoupin county
June 10- Lebanon, St. Clair county
June 11- Sparta, Randolph county
June 12- Ewing, Franklin county
June 22- Bloomington, McLean county
June 23- Hartsburg, Logan county
June 24- Aledo, Mercer county
June 25- Kewanee, Henry county
June 26- Minonk, Woodford county

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Dates Of 1932 Farm And Home Week Are Jan. 11 to 15

Dates for the 1932 Farm and Home Week at the College of Agriculture, University of Illinois have been set for January 11 to 15, it is announced by Dean H. W. Mumford. Selection of the time marks the start of preparations for another record breaker to match the 1931 meeting when 3,146 farmers and homemakers from 97 counties came for a week of instruction, recreation and inspiration.

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Printed in furtherance of the Agricultural Extension Act approved by Congress May 8, 1914. H. W. Mumford, *Director*.

Chinch Bugs, Favored By Drouth, Threaten Corn Crop

The corn crop of central and south central Illinois is threatened with serious damage by chinch bugs, unless the weather turns against these pests or control measures are used, according to the College of Agriculture, University of Illinois.

The drouth of 1930 was so favorable to the bugs that enormous increases occurred in an area including Sangamon, Macon, Piatt, Champaign, Douglas, Coles, Moultrie, Cumberland, Effingham, Shelby, Christian, Montgomery, Macoupin, Madison, Bond, Fayette, Marion, Clinton, St. Clair and Washington counties. If the weather is dry, there are enough chinch bugs to cause heavy losses in Macoupin, Montgomery, Christian, Shelby, Sangamon, Bond, Clinton, Washington and St. Clair counties.

W. P. Flint, chief entomologist of the Illinois State Natural History Survey and entomologist of the college experiment station has outlined four best methods of fighting chinch bugs for county farm advisers in the threatened area.

First of these is the planting of crops on which chinch bugs do not feed. These include any of the legumes, such as soybeans, cowpeas, sweet clover, red clover, field peas, alfalfa, or of the other field crops, rape, buckwheat and sunflowers.

Second, the planting of soybeans in corn which will give moderate protection from the second brood of bugs but not from the first brood coming out of the small grain fields into the corn fields.

Third, the use of resistant varieties of corn.

Fourth, the use of barriers between fields of corn and small grain, these barriers to be used at harvest time when the bugs travel on foot from the small grain stubble to the corn. These barriers should be used particularly between corn and fields of wheat, oats, rye and barley.

The best materials for making barriers are crude creosote of a grade sold by many of the larger manufacturers of coal tar products under various trade names or as coal tar. Also, many of the bugs may be killed by calcium cyanide granules used along the barriers.

Creosote of the chinch bug grade can be bought for 12 to 14 cents a gallon in 50-gallon drums or less in carload lots. One 50-gallon barrel usually is enough to maintain a quarter of a mile barrier during the period necessary to prevent direct migration from small grains to corn. Granular calcium cyanide can be bought for $6.95 for a 25-pound can or $19.75 for a 100-pound can or less in larger amounts. Twenty-five pounds is enough to use over a quarter of a mile barrier to kill most of the bugs working along this barrier for a two weeks period.

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Horse Interest Draws 3,015 To 46 Big-Hitch Exhibits

Horses were so popular as cheap power this spring that 3,015 farmers in 18 counties turned out to see 46 demonstrations on big-team hitches staged by the College of Agriculture, University of Illinois, it is reported by E. T. Robbins, livestock extension specialist. Hitches used in the demonstration ranged from 4 to 12 horses in size and 16 of them included 8 horses or more.

Farmers all over the state claim that horses and mules have done the farm work both cheaply and well this spring, Robbins reported. Low prices for feed have encouraged the men to make full use of their teams. The outfits of 5 to 12 horses enabled each man to cover a big acreage each day.

-M-

Extend Survey Of State's Soils To 1,774 Square Miles

Having already supplied many valuable facts, Illinois' state soil survey was further advanced during the past season with the mapping of an additional 1,774 square miles, according to Dr. R. S. Smith, chief in soil physics at the College of Agriculture, University of Illinois, who is in charge. Started in 1902, the survey is designed to reveal all that can be learned about the kinds of soil in Illinois and to identify the properties and farming capacity of each soil. This information is used as a basis for soil management and treatment, as well as for cropping systems.

Detailed soil reports based on the survey are now available for 51 counties including Clay, Moultrie, Hardin, Sangamon, LaSalle, Knox, McDonough, Bond, Lake, McLean, Pike, Winnebago, Kankakee, Tazewell, Edgar, DuPage, Kane, Champaign, Peoria, Bureau, Henry, Iroquois, DeKalb, Adams, Livingston, Grundy, Hancock, Mason, Mercer, Johnson, Rock Island, Randolph, Saline, Marion, Will, Woodford, Lee, Ogle, Logan, Whiteside, Henry, Morgan, Douglas, Coles, Macon, Edwards, Piatt, Effingham, Wayne, Macoupin and Fulton. Unbound soil maps are available for nine additional counties for which the published maps and soil reports will be issued later. These include Calhoun, Crawford, Cumberland, Fayette, Franklin, Ford, Jackson, Monroe and White.

One of the important things the soil survey has done already has been to reveal the seriousness of the erosion problem in Illinois. The survey figures show that there are 7,000 square miles in the state subject to destructive erosion, 8,000 square miles subject to serious erosion and 25,000 square miles subject to harmful erosion. This leaves only 16,000 square miles on which erosion is not rapid enough to be at least harmful.

Wide use has been made of the survey data in a number of other different ways. Many farmers and others interested in land, use the reports and get information by correspondence for counties on which there is no published report. Land appraisers use the soil maps constantly in their work of valuing land for loan purposes. Public service companies use the soil maps in locating routes in order to avoid the most valuable land. Industrial concerns, such as peat plants, use the survey information about the character and location of peat deposits. Municipalities have secured the assistance of the survey in locating recreational projects, such as golf courses near Chicago and the artifical lake near Springfield. Interest in land utilization is increasing rapidly, and the soil survey has much data ready for immediate application to the problems of utilization.

-M-

Five Millions Lost On Bad Eggs By Illinois Farmers

Bad eggs last year cost Illinois farmers losses conservatively estimated at $5,000,000, according to H. H. Alp, poultry extension specialist of the College of Agriculture, University of Illinois. Most of this loss can be traced to production of fertile eggs during warm weather. Keeping all roosters out of laying flocks during the summer would be one of the greatest steps toward improving the quality and reputation of Illinois eggs, Alp said.

"There is no good reason why the quality of Illinois eggs should not equal that of those produced in other states of the middle west. No poultryman when not using the flock for breeding purposes should hesitate to keep out all roosters. In case roosters now in the flock are not to be used another year as breeders, they may as well be sold at the end of the breeding season as market poultry. Roosters being kept over from season to season should be held as a separate unit to the main flock during the non-breeding season."

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Old Soybean Seed Safe To Plant If Properly Stored

Corn belt farmers, who are planning to increase their soybean acreage this spring to make up the hay shortage, need have no hesitancy about planting 1929 soybean seed, provided it was stored so that the moisture was kept below 12½ percent and the seed was otherwise protected, according to C. A. Van Doren, assistant in crop production at the College of Agriculture, University of Illinois. This is indicated by the fact that soybeans stored in a crib on the college farm in 1929 are still germinating almost perfectly except where the moisture content has gone higher than 12½ percent, he said.

Two hundred fifteen bushels of Illini soybeans were stored in a crib on the college farm in October, 1929. These beans when stored in the crib contained 11 per cent moisture and were 4 feet 2 inches deep. The crib was tight except for an air space between the roof and plate. A one-fourth inch sheet of snow blew in on the beans during the December blizzard of 1929. This snow and similar blizzards during the winter of 1930-31 increased the moisture content of the beans on the surface of the crib from 11 to 18 per cent. The beans 1 foot from the surface had their moisture content increased from 11 to 14 per cent, while two feet below the surface the moisture content went up from 11 to 12.5 per cent and three feet and deeper it stayed at 11 per cent or less, regardless of outside weather conditions.

Soybeans on the surface have dropped off in germination since November,1929, from 98 per cent to 59 per cent while the soybeans below two feet are still germinating more than 93 per cent. Soybeans one foot below the surface germinated 73 per cent in April of this year.

-M-

Winner Of Race With Weeds Must Always Stay In Lead

There is only one way to win the race with weeds and that is to stay ahead of them all the time, says Lee A. Somers, vegetable gardening extension specialist of the College of Agriculture, University of Illinois.

"Few vegetable crops can carry on a fight alone with weeds. It is up to the gardener to protect his welfare and his food supply by keeping weeds out of his garden. A good gardener considers a large weed in his garden to be an insult and will not tolerate it.

"It is not hard to kill a weed when it is in its seedling stage. A shallow stirring of the soil will do it. The easiest method and the most effective one is frequent, shallow cultivation. A weekly, shallow cultivation supplemented with some hoeing of the weeds in the row will keep them from developing to the place where they are hard to kill.

"Many gardeners not only fail to cultivate often enough but also cultivate much too deeply. This seriously injures the root system of the crops. It also wastes moisture and leaves the soil in poor condition. The common one-horse garden cultivator having five to eight shovels which enter the soil only about two inches deep is the best one to use in most cases."

-M-

Lumber Freight Bill Is Now Costing State Millions

Much of the twenty-nine million dollar freight bill which Illinois pays out every year for lumber transportation could be saved through the establishment of the two proposed national forest units in southern Illinois and the development of other available forest areas, according to L. E. Sawyer, forestry extension specialist of the College of Agriculture, University of Illinois and the Illinois State Natural History Survey. The plan under which the two units would be established was worked out through cooperation of the college soil survey division, the Illinois State Natural History Survey and the U. S. Forest Service. It now awaits final passage of an enabling act which would authorize the federal government to buy the necessary land.

Illinois is the center of lumber consumption in the United States but the center of lumber production is nearly 2,000 miles away in the state of Washington, Sawyer pointed out. The consequent high freight charges are what runs up the high cost of wood products in the central states. Freight is $11.19 a thousand board feet, making a total of $29,100,159 a year paid out by Illinois for lumber transportation. With wood as important as it is in the standard of living, the importance of developing Illinois timber-producing areas is obvious, Sawyer said.

"Much of the timber required in Illinois either can be grown within the state or in adjoining states and this exceptionally high freight bill used for other purposes. Illinois, with an area of more than six million acres that should be timbered, could, if this area were reforested, produce at least one billion board feet of timber each year. This would, in the main, be hardwood timber of which Illinois uses more than half a billion board feet a year and an additional amount of nearly two billion board feet of softwood lumber.

"Establishment of the national forest purchase units as provided for in the enabling act which recently was passed by the House of Representatives would not put all of this area back into timber. It would, however, authorize the establishment and development of national forests which would be used to demonstrate intensive cultural methods of timber production, water shed protection, the proper use of land of non-agricultural value and, if the state desired, for game preserves and public hunting grounds."

-M-

Heavy Bloom Is Not Guarantee Of A Big Fruit Crop

Just because a fruit tree blooms heavily is no sign that it will yield a big crop, says R. L. McMunn, associate in pomology at the College of Agriculture, University of Illinois. It may be of a self-sterile variety, and if a single specimen or a large block of such a variety is set with no other variety close by, there will be very few if any fruits, he explained. Self-sterile varieties are unable to set fruit when pollinated with their own pollen. This is in contrast to self-fertile varieties which set fruit when pollinated with their own pollen.

"Many of the highest quality varieties of apples, pears, plums and sweet cherries are self-sterile and can be fruited only by planting some other variety with congenial pollen in close proximity to the self-sterile varieties. Since not all varieties will cause others to set fruit, it is well to get information regarding the most congenial varieties to plant to insure a crop.

"The non-fruiting of self-sterile varieties and of old trees also can be overcome by top-working a congenial variety in one of the limbs of the old trees. Bringing in bouquets of blossoms and placing them in pails of water in the trees has become a commercial orchard practice to make self-sterile trees set profitable crops."

-M-

Vine Crop Pest Is Threatening To Be Worse This Year

More damage than for several years is likely to be done this season to cucumbers, melons and squash by the striped cucumber beetle, according to a report to the College of Agriculture, University of Illinois, by C. C. Compton, assistant entomologist of the Illinois State Natural History Survey. This light yellow beetle with three black stripes on the back became very thick during the summer and fall of 1930 and had ideal conditions for hibernating during the past winter, he reported.

"Best results in controlling them under Illinois conditions are obtained by using a dust of calcium arsenate and burned gypsum. The latter is ordinary building plaster. If it can not be obtained without hair in it, the hair can be sifted out easily with an ordinary fly screen.

"One pound of calcium arsenate should be mixed thoroughly with 20 pounds of gypsum. This may be done by stirring and running both materials through a fly screen several times or by putting both substances in a barrel, old rotary churn or tin pail with a tight cover and rotating the container several minutes.

"The dust may be applied to young plants by means of an ordinary dust gun or flour duster or by a home-made shaker. This can be made by nailing a handle to the sides of a half-gallon tin pail having a tight-fitting cover and then punching holes in the bottom of the pail from the inside out with an eight-penny nail. The holes should be punches at the rate of four to the square inch.

"The first application should be made as soon as the beetles appear or as soon as the plants are well up. Dusting should be repeated often enough to keep the plants and ground around them covered until the beetles are through feeding."

-M-

Even The Mexican Mules Like Those Big-Team Hitches

Toughened as they are, even Mexican mules respond when put into big-team hitches such as now are so popular on Illinois farms. Worked this way, the Mexican mules get fat, according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois, who played a part in introducing the big team hitches into Mexico. Last year he was requested by H. W. Fiek, manager of a large ranch at Tlahualilo, Durango, Mexico, to send information about big-team combinations to pull tractor plows. He has just sent Robbins a report of his success.

Fiek wrote, "It seems to me that mules working in these big teams keep in better condition. Our mule herd here numbers about 1,500. I have taken some of the poorest mules and hitched them in with some of the mules in good condition that had been working in the big teams for quite a while and in a short time noticed that they were in much better condition than when they had been when working in smaller teams of two or four mules.

"I have had a number of these big-team outfits working for several months. With the right hookup, disk plows do excellent work. I have found that the three-disk plows and nine-mule teams give excellent results. I have seen the driver get off the outfit and the team would keep moving on."

The nine mules are worked in three ranks of three mules each, which gives a good lineup with no side draft and plenty of space between mules, Robbins explained. A truck is used to guide the plow and to furnish a seat for the driver. It is made from the hind axle of a wagon having a hind wheel to run in the furrow and a front wheel on the other end of the axle to run on the land. This keeps the driver's seat about level even when plowing ten inches deep as Fick does in his irrigation farming.

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The Extension Messenger

COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

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Home-Grown Posts, Made Right, Will Outlast Others

Fence posts, one of the main crops of the farm woods, will last as long or longer than most posts than can be bought, provided they are properly cut from good post timber, thoroughly seasoned and well set, according to L. E. Sawyer, forestry extension specialist of the College of Agriculture, University of Illinois and the Illinois State Natural History Survey.

"The time of the year when fence posts are cut does not influence their life as long as they are properly seasoned before being set. However, most fence posts are cut in the winter and the bark usually left on them, because they are hard to peel at that time. Loosening of the bark after the post has been set leaves an opening where water collects, fungus spores get in and decay starts. It is then only a matter of a few years until a post is so rotten that it has to be removed.

"The bark can easily be removed from trees that are cut during the spring and summer, because the cambium layer is then full of moisture. The larger the tree the longer the post will last, for large trees usually have much less sap wood than small ones. This, however, does not apply as directly to Osage orange or hedge posts that are very durable even in small round sizes.

"If posts are set in the ground before they are thoroughly dry, they will last only a fraction as long as they would if thoroughly seasoned. A good method of stacking posts to season them is known as the two-and-seven pile. Two posts or other pieces of timber of equal size are put on the ground about 4½ feet apart. On top of these two bottom timbers and at right angles to them are put seven posts. Alternate layers of two and seven posts are piled up as high as is desired. This leaves plenty of space for air circulation between the posts, and if they are left in the pile for from six to eight months, especially through the summer, they will be dry enough to set.

"Posts that have been peeled and thoroughly dried before setting will last several years longer than if set with the bark on or only partially dry."

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Seventeen-Year Locusts Will Do Little Serious Damage

Seventeen-year locusts, with their shrill, pulsating song, will appear at scattered points through southern Illinois between now and the first of June, but they will do little real commercial damage and, furthermore, there is nothing that can be done about it, according to a report to the College of Agriculture, University of Illinois, by W. P. Flint, chief entomologist of the Illinois State Natural History Survey. The old locust of Biblical times and the cause of destruction of crops from the time of Moses down to the present was not the 17-year locust of Cicada, as it is more properly called, but just certain species of common grasshoppers, Flint said.

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Printed in furtherance of the Agricultural Extension Act approved by Congress May 8, 1914. H. W. Mumford, Director.

National Forests Would Be A Boon In Restoring Game

Game once so plentiful in Illinois would be restored and a variety of other benefits obtained with the establishment of the proposed national forest purchase units in southern Illinois, in the opinion of L. E. Sawyer, forestry extension specialist of the College of Agriculture, University of Illinois and the Illinois State Natural History Survey. A plan for the unit has been worked out through cooperation of the college soil survey division, the U. S. Forest Service and the Natural History Survey.

"National forests are expected to produce the maximum amount of timber on every acre of timber soil in them. Thus, they produce a supply of timber for coming generations as well as for present ones. They maintain permanent industries that offer employment to thousands of people. Permanent stands of timber regulate the climate and not only modify extremes in temperature but also help govern climatic conditions. Thus, they lessen the possibilities of serious drouth and floods. Erosion on timbered slopes is much less than on bare ones, and the silting of streams is decreased and disastrous floods prevented. Game of all kinds finds food and shelter in the forest, and fish abound in the waters of streams that are not disturbed by silting and floods.

"Large amounts of money must be spent and a vast amount of work done to accomplish all this. The area must be protected from fire, the most desirable trees must be planted if they are not already growing and when the crop is harvested, cutting must be done properly. This protection of the forest, growing of trees and harvesting of the product maintains the permanent industries that are the life of a community.

"Moisture given off by the growing trees and the springs found in a permanent forest modify both extremes of temperature. Rivers, silted as they are at the present time, are carrying thousands of tons of the most productive soil to the ocean. However, if the bare hills that are now eroding were covered with timber, rivers might again clear up and productive soil be left in its place.

"No longer can the wild turkey and deer be found as they once were in Illinois, but if the hills were reforested and protected, these and other forms of game would have a place in which to propagate."

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Rations For Hogs Cheaper; Profits Can Be Increased

Good hog rations are cheaper this year than they were last, and more farmers ought to be able to cash in on the added profits which come from better feeding, according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. Protein feeds being used by most of the 1,732 farmers in the college's honor roll swine raisers project have a cost only of four cents for each pound of protein they contain. This compares with six cents a year ago. Corn prices have dropped off about the same as protein feed prices.

Most of the honor roll swine raisers in 52 counties are supplying protein to their spring pigs in a mixture of 2 parts tankage and 1 part either of soybean meal or linseed meal. This combination has more than 50 per cent protein so that a comparatively small amount is needed to supply the needs of the pigs.

Charles Borrowman, a Pike county honor roll swine raiser, has shown what may be accomplished by sanitation and economical feeding as recommended in the project. Last year his eleven sows raised 110 pigs which he sold at a trifle more than six months old, averaging 205 pounds each. This spring Borrowman was disappointed because the same eleven sows raised an average only of 9½ pigs a litter instead of ten. However, even that average would satisfy most hog raisers, Robbins pointed out.

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Two Ways Given For More Meals Of Corn On The Cob

About the worst objection to corn on the cob is that the season for it does not last long enough, says B. L. Weaver, of the horticultural department, College of Agriculture, University of Illinois. There are two ways of getting a succession of sweet corn and thereby overcoming this, he said. One is to plant the same variety at about two-week intervals up to the first of July in central Illinois. The other is to plant two or three varieties at one time which will mature at intervals. Both methods have their advantages and each has its champions among gardeners.

By planting the same variety at intervals the grower can use a corn which meets his demands or those of his market as to size, season, color or quality. An example is to be found in the Peoria sections where Whipple's Early Yellow has been a popular market variety. Howling Mob, a white variety, has come to be one of the main plantings for sections near St. Louis.

Many home gardeners have found that Golden Bantam corn has changed greatly as to size and season but that its high quality has been retained. Golden Sunshine is earlier than many strains of Golden Bantam, and a succession of yellow corn could well be made up of that variety for early, followed by Whipple's Early Yellow and Bantam Evergreen.

A succession of white corn may be had from Mammoth White Cory, Howling Mob and Narrow Grain Evergreen or Country Gentleman. As much as a month's supply of sweet corn has been had from a single planting of these three varieties.

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Raspberry Buyer Willing To Pay Well For High Quality

People do pay and pay well for their red raspberries, and Illinois growers therefore can afford to take the time and spend the money to make this product attractive when it reaches the retail trade, it is pointed out by R. S. Marsh, horticultural extension specialist of the College of Agriculture, University of Illinois. Modern competition demands attractiveness of any product which is to meet with favor and find a ready sale with the buying public, he added.

"A clean pint box of white tulip wood with a false bottom is one of the most attractive packages for red raspberries. Fruit of the best quality should be used, and if the package is then wrapped in one of the clear transparent wrapping tissues, it will find immediate favor with the discriminating housewife. Transparent wrapping tissue not only adds to the attractiveness of the fruit, but also suggests cleanliness when the package is displayed on open-air and sidewalk retail fruit stands which are now so numerous.

"Some of the first shipments of red raspberries from southern Illinois in past years have sold for $9 and $10 for a 24-pint crate. The crop is expected to bring within 20 per cent of normal prices this year. Of course, the price falls as the supply increases, and when the season is nearly over most sales are being made at $4 to $4.50 a crate. A few growers have reported that the crop of Latham red raspberries the second year after planting returned a gross of about $1 for every plant set out the preceding year. As the plants sell for about $30 to $35 a thousand, this is a high return on the original investment.

"Latham and Chief are the high-producing, disease-resistant red raspberries that are proving so popular in Illinois. The Chief produces a crop about 10 days before the Latham are ready for harvesting, thus extending the marketing season for the berries."

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The Extension Messenger

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Costly to Delay Early Pigs Until New Corn Is Ready

Not once during the past ten years has it paid to follow the rather common practice of holding back March farrowed pigs and putting on the last 100 pounds of their gain with new corn in the fall, according to W. E. Carroll, chief in swine husbandry at the College of Agriculture, University of Illinois. The estimated loss on the basis of 225-pound hogs has varied from 78 cents to $8.36, with an average loss of $2.88 on each hog held back for finishing on new corn, he reported.

It usually does not pay to hold early farrowed pigs for the new corn crop because hog prices usually begin going down the last of September and continue dropping frequently into January. The decline varies widely from year to year, although during the past 22 years there was not one in which the November or the December average price of light hogs was higher than the September price. The average decline from September to October was $1, from October to November 78 cents and from November to December another 25 cents, making a total decline of just a little more than $2 a hundred.

The objection usually raised to having spring pigs ready for a September market is that they must be farrowed early. However, any pig that is farrowed before April first should be ready for market in September or at the latest, early October, if he is maintained in good health and kept free of parasites. The date of farrowing is a question for each farmer to decide for himself. Once March pigs are produced, however, the most money can be made from them under present market conditions by getting them on an early market. The plan should appeal especially to those who already are practicing swine sanitation as recommended by the agricultural college extension service, for it offers additional reward for their efforts.

-M-

Market Situation Prompts Campaign of Fruit Thinning

Prospects of a heavy national fruit crop and a weak market have led to a fruit thinning campaign which will be pushed the first week in June by the extension service of the College of Agriculture, University of Illinois throughout the fruit growing sections of the state. Small sizes and poor grades of fruit, which can be prevented by thinning, are not likely to find a sale this year, regardless of price, according to R. S. Marsh, horticultural extension specialist of the college. Two conferences for southern Illinois farm advisers marked the start of the fruit thinning campaign. The first meeting was held at Carbondale May 28 and the second at Centralia May 29. Following these each adviser will hold demonstrations in his own county.

Besides preventing small sizes and poor grades of fruit, thinning will also protect many weakened and injured trees. Owing to winter injury in January, 1930 the framework in many peach trees is not strong enough to support a heavy crop. Many culls also can be avoided by proper thinning, Marsh explained. Peaches that show insect feeding punctures, "catfacing" or any other blemish should be removed from the trees following the June drop. The main point in thinning is to leave only enough peaches on the tree to produce marketable sizes of 2¼ inches or larger.

-M-

Terraces Are Worth $30 An Acre, Some Farmers Believe

Terraces, those things which make running water walk and thereby prevent sloping farm lands from being washed and gullied, are valued up to as high as $30 an acre by Illinois farmers who are using them, according to E. G. Johnson, farm mechanics extension specialist of the College of Agriculture, University of Illinois. Soil erosion has become such a waste in Illinois that the college is conducting more than 150 terracing demonstrations in cooperation with farmers in fifty counties to show how the damage can be prevented.

Silas Andrews, a Wabash county terrace user, reported that he believes it is worth from $10 to $30 an acre to have a rolling field terraced.

Terraced land on the farm of T. E. Reuss, Belleville, was reported to have increased markedly in fertility because, as he explained, the plant food no longer washes away as fast as it is produced. Wilson Brother, Warren, added that terraces save soil, manure, moisture and fertility. He could not estimate their worth on his farm but said that they were worth decidedly more than the cost.

Terraces over a period of years may be worth as much as the land itself, in the opinion of Roy Black, Stonefort. He considers $8 an acre a conservative estimate.

Mangum terraces are the type being used in the Illinois demonstrations. They are so named after their discoverer, P. H. Mangum. They are a series of broad ridges built across the slope with a slight grade. They carry running water slowly off the field in a wide shallow waterway. If properly built, terraces do not hinder farming operations and if handled right, need very little upkeep. Well-established terraces on land with 8 per cent or less slope can be ignored in the farming operation.

-M-

Illinois Could Have Even More Fame As A Lamb State

Some of the best lambs on the market are produced in Illinois and many more like them could be raised on farms of the state if more attention was given to better breeding, feeding and management, in the opinion of W. G. Kammlade, assistant chief in sheep husbandry at the College of Agriculture, University of Illinois. Good feeding and management can not entirely overcome poor breeding, while good breeding can not overcome neglect. Neither has anyone ever made much from poorly bred, thin lambs. Attention has always paid and it will do so again this year, he said.

"One of the rules of successful lamb raising is to keep them thrifty. This means to prevent common summer ailments and to supply good feed. Sanitation and pasture rotation are the easiest ways of doing this. Lambs infested with internal parasites are not thrifty and can not make good use of feed. Most of the lambs that have become infested with parasites are raised on old pastures on which sheep have grazed for many years. New pastures are not likely to harbor parasitic troubles. If old, infested pastures must be used, then regular medicinal treatment must be resorted to as a control measure if the lambs are to do well. Many reports show the reliability of the bluestone treatment for this purpose.

"Use of pine tar or a similar repellent is advisable in many sections if the flock is to be kept free of 'grub in the head.' Where attacks have been severe, good management requires that the fly repellent be applied frequently about the nose."

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World Production Of Redtop Seed Centered In Illinois

Eighty-five percent of the world's supply of redtop grass seed is produced in thirteen counties in southern Illinois, the industry netting farmers of that section an average of about $1,500,000 a year, according to J. J. Pieper, associate chief in crop production at the College of Agriculture, University of Illinois. The area, which includes all of Effingham, Clay, Wayne, Hamilton, Jefferson and Marion counties, and parts of Jasper, Richland, Hamilton, Franklin, Washington, Clinton and Fayotte counties, furnishes about 95 percent of the total production of the United States, the rest being harvested in Indiana, Iowa, Kentucky and Missouri.

Redtop is the most important of the bent grasses and the second most important pasture grass in America. It ranks second only to Kentucky bluegrass as a turf plant. It goes by many common names, including whitetop, white bent, marsh bent, southern bent, English bent and Herd's grass.

There are two and one-half million acres in the redtop region of southern Illinois, according to Pieper. Of the 19,700 farms in the area, 7,000 of them grow practically all of the redtop seed. The average annual production from 1922 to 1930 was more than 10,000,000 pounds and at the average price of 15 cents a pound, the crop had a gross value of $1,500,000 a year during that period.

A record year for seed production was established in 1927 when 18,000,000 was harvested. Last year, however, there were only 6,000,000 pounds of seed. During the past six years the highest yield of seed was 70 pounds an acre in 1927 and the lowest, 31 pounds an acre in 1925. The price from 1922 up to the present time ranged from 10½ cents a pound in 1927 and 1928 to 22 cents a pound in 1925 and 1926. The average annual production of redtop seed a farm is 1,500, having a value of $225.

"There seems to be no single reason why redtop seed production is concentrated in the small area in southern Illinois. It is probably a combination of environmental factors such as soil, climate and economic conditions. While redtop is adapted to the region, this does not mean that the environment is ideal. If the soil was more fertile, it would be better suited for seed production of redtop. The plants respond markedly to soil treatment, especially where limestone and nitrate fertilizers are added."

-M-

Damage From Hessian Fly Is Likely In Some Counties

As if market and weather conditions were not enough, the Hessian fly, most destructive insect pest of wheat, has come along this spring to threaten added losses for wheat growers, it is reported to the College of Agriculture, University of Illinois by J. H. Bigger, assistant entomologist of the Illinois State Natural History Survey. Damage to the wheat crop by this pest is entirely probable, especially in the western and west central Illinois counties, Bigger said.

There is nothing that can be done about the threatened damage so far as the present crop is concerned, but growers can avoid similar losses another year by not seeding the crop too early in the fall, Bigger recommended. Safe sowing dates announced each fall by the college and the Natural History Survey are the surest way to keep the insect out of wheat and thereby prevent losses.

That generation of the fly which hibernates over the winter was very strong in western and west central Illinois counties this spring, and examinations indicated that there would be a large spring brood. Some fields under observation had 32 to 45 percent of the tillers with eggs at the time wheat had made two joints. It is under these conditions that the fly establishes itself high on the stems and causes much breaking over of the grain just before harvest.

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Once Run-Down Farm Now Twice As Good As The Average

A run-down central Illinois farm of ten years ago is now earning twice as much as other farms in its neighborhood as a result of good crop yields plus efficient management of 10 dairy cows and 18 brood sows, it is reported by P. E. Johnston, of the farm organization and management department, College of Agriculture, University of Illinois. The farm of 170 acres is one of the 2,000 or more whose owners and operators are cooperating with the college in keeping systematic farm accounts.

Ten years ago the farm was run down to the point where crop yields were low. Although it is on yellow gray silt loam soil and is quite rolling, it has for several years produced at least 15 percent more an acre than the average of farms located on better brown silt loam soil. A liberal application of limestone followed by the use of sweet clover and alfalfa brought the higher crop yields. Records from a large number of fields in the area indicate that where sweet clover or alfalfa occupy the land one year out of four, corn yields are 10 bushels an acre higher than where no clovers are grown.

During the past two years hogs raised on the farm have returned $143 for every $100 of feed fed them. This was about 10 percent better than the returns secured by other farmers who kept accounts. The hog raising is done under the sanitation system of sweet clover pasture. Dairy cows on this farm also have been more efficient than average.

The combination of high crop yields and efficient livestock produced both gross and net receipts which were $5 an acre higher than the average, despite the fact that the land on this farm was valued $50 an acre less than the average of other farms in the area.

-M-

Grows Spring Lambs At Rate Which Will Be Hard To Beat

A record which will be hard to beat has been hung up by Harold Shepard, an Edwards county farmer, in the raising of prime spring lambs, according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. Recently, when a shipment of graded lambs were being made from his county, he brought in four lambs ranging from 85 to 90 days old and totaling 350 pounds. One, which was 85 days old, weighed 95 pounds. Lambs weighing a pound for each day of age can be produced only with well-bred animals which are skillfully fed, Robbins pointed out. Another unusual feature about the lambs was that their quality was so high that all four of them graded prime. Ordinarily, about one lamb out of fifty which farmers bring in grades as good as that, Robbins said.

These lambs were produced by blocky, easy keeping, grade ewes and were sired by a thick, short-legged, black-faced ram. The ewes had run on rye pasture and were fed oats and corn together with some soybean hay. The lambs had eaten very little grain, but evidently had an abundance of milk from the thrifty, well-fed ewes.

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Carbonation Is Not A Preventive For Dairy Spoilage

Carbonation, now extensively used with certain beverages, offers little promise of reducing the heavy losses suffered by the dairy industry from the spoiling and deterioration of dairy products, according to the results of experiments by the College of Agriculture, University of Illinois. The work is reported in a new bulletin, "Effect of Carbonation on Bacterial Content and Keeping Quality of Dairy Products," just released by the college. The investigators and authors of the new bulletin are M. J. Prucha, chief in dairy bacteriology; J. M. Brannon, assistant chief in dairy bacteriology and H. A. Ruehe, chief in dairy manufactures.

There are some benefits from carbonation as now used in preparing certain beverages and attempts have been made to carbonate dairy products with expectation that similar or certain benefits would be obtained. The idea has gone so far that patents have been granted to private concerns covering the application of carbon dioxide to foods, including dairy products, the patentees claiming that carbonation preserves food and makes it more sanitary.

In the experiment, carbonation of dairy products did not prevent, nor in most cases did it even retard to any great extent, the deterioration of dairy products. In some instances, carbonation changed the character of the deterioration and in other cases it delayed or completely checked development of certain off-flavors. Whether these slight benefits are of economic value to the dairy industry remains to be demonstrated under commercial conditions.

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Early Cultivation Will Get Most Out Of Soybean Crop

The bigger acreage of soybeans going in on corn belt farms this spring will ay more if farmers cultivate the crop early, according to C. A. Van Doren, assistant n crop production at the College of Agriculture, University of Illinois. Many weeds hich not only lower the yield and quality of hay but also may cut the seed yield and ake the crop hard to harvest will be killed by early cultivation, he pointed out.

"Soybeans in rows wide enough to cultivate are easy to free of weeds, but t is better to cultivate with a rotary hoe before the beans are tall enough to cultivate with a row cultivator. Soybeans drilled solid are likely to get very weedy nless special precautions are taken. First of all, a crop or two of weeds should be radicated on the ground before soybeans are planted. Second, the crusty soil should e broken before the beans come up. Third, a rotary hoe should be used often enough o keep down the weeds until the ground is shaded. The rotary hoe should be moved airly fast to get the best results.

"Fear of injuring the plants should not stop cultivation, since the advantage obtained through getting rid of the weeds will more than offset any reasonable eduction in stand. It has been found that the stand of soybeans was reduced more and he weeds killed better when the beans were cultivated when one-half inch high. The ext best height from the standpoint of killing weeds was three inches and the least est six inches. Stand was reduced less in plots cultivated in the afternoon than in hose cultivated in the morning."

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Farmers To See How Treatments Boost Values Of Land

Soil treatments which in one case made land four times as valuable as it ight otherwise have been will be explained to farmers of southwestern Illinois in a eries of meetings which the College of Agriculture, University of Illinois will hold n four of its soil experiments fields, June 9 to 12. The schedule of meetings is: arlinville, Macoupin county, June 9; Lebanon, St. Clair county, June 10; Sparta, andolph county, June 11; and Ewing, Franklin county, June 12. Each of the meetings ill start at 1:30 p.m., and representatives of the college will be present to explain ho experimental work and show farmers how they can use the results for getting better aying crop yields on their own farms. The meetings will be open to all interested.

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Two Farmers Make Hogs Pay Where Failure Would Be Easy

Two Illinois farmers in the dairy and wheat section near St. Louis have made outstanding successes by specializing on hogs in an area where hogs are at a disadvantage, according to P. E. Johnston, of the farm organization and management department of the College of Agriculture, University of Illinois. Although a certain amount of diversity seems best for most farms, these two are striking examples of specialized farms which have paid high returns, he added.

During the past five years these two farms have consistently earned two to three times as much as the average of other account-keeping farms in the area. In 1930 each of the operators of these two farms received as pay for his labor and management more than $5,000 more than average of account-keeping farmers in the neighborhood. Their success is all the more striking because in that section of the state hogs do not have as great an advantage as either dairy cattle or poultry, Johnston pointed out.

Each of the farms produced about $12,000 worth of pork from 50 brood sows in 1930. Both farmers bought large quantities of feed, which was a profitable practice since the hogs returned more than $200 for each $100 of feed fed.

"Although it would be unwise for many operators to produce hogs in an area where hog production is at a disadvantage, it would be unwise for these two farmers to specialize in anything other than hogs. The consistent success of these two men over a long period indicates that their high earnings were the result of management and not of luck."

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Mild Bronchitis Is Serious Menace To Young Chicks

There is a mild form of laryngotracheitis, more commonly called bronchitis, which may not cause marked symptoms in mature fowls, but which may spread to young chicks one to three months old and produce a very severe form of the disease and death, according to a warning by Dr. Robert Graham, chief in animal pathology and hygiene at the College of Agriculture, University of Illinois. One type of the disease is being studied by the college pathologists to protect the poultry industry against losses, but so far no control measures other than sanitation have been worked out. The disease is an inflammation of the larynx and trachea, or windpipe, and is recognized as one of the worst obstacles to profits in commercial poultry fattening.

Flock owners raising young chicks can protect them by keeping them away from mature fowls and thereby avoiding the risk of the mild type of the malady. As an extra precaution the person caring for the new brood should stay away from the house where the mature flock is kept.

The mild type of the disease in the mature flock can be detected at night by the breathing, wheezing noise of chickens on the roost. Mildly infected mature fowls also can be detected in the daytime if they are watched closely. Suspicious or mildly infected fowls should be taken from the flock and the house thoroughly disinfected, Mr. Graham recommended.

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"Rich" Illinois Soils Vary 1,700 Per Cent in Yield

Far from being universally rich, Illinois' soils vary nearly 1,700 per cent in what they can yield naturally. This is revealed in a summary which the College of Agriculture, University of Illinois has just completed on the 1930 crop yields from 30 of its soil experiment fields scattered over the state. Results are reported in a bulletin just released, "Crop Yields from Illinois Soil Experiment Fields in 1930," by F. C. Bauer, chief, soil experiment fields.

The annual acre value of crops from untreated land during the rotation ending in 1930 ranged from $2.15 at Ewing to $38.35 at McNabb, making the difference of nearly 1,700 per cent in what the soils yield naturally.

No one system of soil treatment gave the best results on all soils. The net value of crop increases from the best treatment for each field ranged from $18.75 an acre annually for a combination of manure and limestone at Oquawka to 43 cents an acre for manure alone at McNabb.

Between these two extremes the rank of the fields, together with the best treatment for each and the net annual acre value of the crop increases were: Ewing, manure, limestone, $16.16; Bloomington, residues, limestone, bone phosphate, potash, $15.29; Newton, manure, limestone, $14.05; Enfield, manure, limestone, $13.97; Aledo, residues, limestone, $12.86; Lebanon, residues, limestone, $12.53; Raleigh, manure, limestone, $12.06; Clayton, manure, limestone, $11.86; Carlinville, manure, limestone, $11.57; Elizabethtown, manure, limestone, rock phosphate, $11.29; West Salem, manure, limestone, $11.21.

Toledo, manure, limestone, $10.69; Oblong, manure, limestone, $9.84; Sparta, manure, limestone, $9.58; Carthage, manure, limestone, $8.63; LaMoille, residues, limestone, $8.24; Kewanee, manure, limestone, $7.99; Joliet, residues, limestone, rock phosphate, potash, $7.82; Mount Morris, residues, limestone, $7.80; Dixon, manure, limestone, $7.21; Antioch, residues, limestone, bone phosphate, $7.19; Minonk, residues, limestone, $7.18; Hartsburg, residues, limestone, $6.85; Springvalley, manure, limestone, $6.05; Palestine, manure, limestone, legume catch crops, $5.86; Unionville, manure, limestone, $5.64; and Odin, residues, limestone, $5.63.

"The range in total crop values under the most effective treatments, after deducting the cost of the treatment, was not so great proportionately as the range in net increases, the extremes being $43.30 an acre at Aledo and $10.33 at Unionville. From the farmer's point of view, however, these figures are of more importance than the value of the increases. It would be much more difficult for a farmer to meet his expenses and derive profit from $10.33 an acre than it would from $43.30 an acre. Soils low in natural productivity and low in response to treatment will require the most careful management."

- M -

Neglected Grape Vines Can Not Produce Quality Fruit

Grapes can be grown in Illinois without particular attention being paid to insect and disease control, but if the vines are to be healthy and produce good crops of quality fruit, it is necessary to practice sanitation in the vineyard and to spray thoroughly and consistently, says A. S. Colby, chief in small fruit culture at the College of Agriculture, University of Illinois.

The first spraying should be made just before the bloom appears to control berry moth, rose chafer, black rot and anthracnose. A combination spray of bordeaux standard strength, and 3 pounds of lead arsenate in 100 gallons of solution may be used. The second spray, using the same materials, should be put on right after the bloom has fallen. Grape leaf folder, rootworm and the downy mildew are controlled to some extent by this spray, as well as the pests already mentioned. Another spray made ten days after the fall of the bloom will give additional protection. It differs from the first two in that double strength arsenate of lead at the rate of 4 pounds in 100 gallons of liquid is recommended in combination with the standard bordeaux spray.

In some cases a fourth application three weeks after the bloom has fallen is necessary to control grape pests. The same spray mixture is recommended as for the third except where leaf hoppers are present. In this case nicotine sulfate at the rate of 1 pint in 100 gallons of solution should be added. The leaf hoppers have to be hit by the spray or they will not be effectively controlled. An angle nozzle should be used and the underside of the leaves sprayed thoroughly.

Many of the common grape troubles may be kept down by sanitary measures. Headlands, fence rows and surrounding areas where leaf hoppers live before migrating to the grape leaves in spring should be burned. Also raspberry plants should not be planted near grapes, as the former provide temporary quarters for leaf hoppers while they are waiting for the grape leaves to grow to good size. Cultivation often and early during the growing season followed by the sowing of a cover crop in August aids in destroying the immature form of the root worm, berry moth and part of the vine-carrying diseases such as black rot, anthracnose and the mildew.

-M-

Skill, and Not Money, Secret of This Livestock Success

Starting out with only a small investment in breeding animals, Mather Brothers, of Mason County, have developed purebred livestock which has won its share of honors against the best collections which money could assemble, according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. Their success is a credit to their ability as stockmen and proves that skill, and not money, develops herds. Their ability is a combination of native capacity, college training and experience, Robbins said.

The two brothers, Manley B. and Leslie E., were graduated from the College of Agriculture, University of Illinois in 1913 and since then have developed high-class herds of Shorthorns and Duroc Jerseys and a choice collection of Percherons. Year by year their name has gained added prominence in the show rings. Their investment in breeding stock has been small. Quality at moderate price was sought at the start. The beginning was made with only a few animals of acceptable pattern. Subsequent purchases have been few.

Now their animals of each breed are of remarkable uniform type, Robbins reported. The long list of prizes they have won in many of the largest livestock shows prove that their animals are of the popular pattern for each breed.

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Vegetables Now Sold in Bunches Under Newer Standards

Ten years ago it wasn't nearly as important to tie vegetables in bunches for market as it is now, according to J. P. McCollum of the horticultural department, College of Agriculture, University of Illinois. Better grading and better handling have brought the change. Bunching is now practiced with all the early root crops, green onions, asparagus, kohlrabi, rhubarb, parsley, leeks, celery and sometimes sweet corn and various other products of the garden.

"The vegetables should be bunched and handled so as to present an attractive appearance. To this end it is desirable that they be packed into marketing containers with as little delay as possible after they are harvested. Exposure to the hot sun and dry winds wilt the tops and shrivel the roots. Consequently, just as soon as vegetables are harvested they should be shaded and cooled.

"Since bunching is done primarily for convenience in handling in retail stores, the bunches should be of the proper sizes for the ultimate consumer. Vegetables making up each bunch should be carefully graded and selected so as to increase the uniformity and attractiveness of the product.

"As the vegetables are likely to be wilted and dirty, they should be washed, preferably after bunching, in running water. Unless the roots are badly caked with dirt, they may be rinsed in a tank of water. However, the water should be changed often to prevent the spread of decay organisms and to insure cleanliness."

-M-

New U. of I. Plan for Milk House Popular With Dairymen

A milk house plan recently issued by the College of Agriculture, University of Illinois is proving so popular with dairymen that more than one-third of 10,000 milk houses recently erected in the St. Louis territory has been built like it, according to E. G. Johnson, farm mechanics extension specialist. Dairymen in that territory turned to the plan when the St. Louis Board of Health recently secured an ordinance requiring a separate milk house or milk room for each dairy barn and setting up standards of construction for such houses.

While the plan for the house has been extensively used in the St. Louis area, it also will meet the minimum health requirements of most cities in and adjacent to Illinois at a low cost for house and overhead. The house was designed so that if kept painted it will be attractive. It is simple enough so that anyone accustomed to using tools can build it at a minimum expense.

The plan for the house and the general requirements of milk houses are printed in the form of a regular college circular, No. 371. The authors are W. A. Foster, assistant chief in rural architecture; H. A. Ruehe, head of the dairy department, and C. S. Rhode, dairy extension specialist. The circular includes specifications for the house and a bill of materials. The house is 8 by 8 feet in size.

-M-

Guernsey Breeders Plan Field Day at Grangemead June 23

One of the state's well known Guernsey dairy cattle breeding establishments which is made up primarily of imported animals is to be the scene of a field day to be held June 23 by the Illinois Guernsey Cattle Breeders' Association, it is announced by C. S. Rhode, dairy extension specialist of the College of Agriculture, University of Illinois and chairman of the event. The place selected is Grangemead Farm, owned by F. K. Babson, St. Charles. Plans are being made for approximately 1,000 Guernsey breeders and boosters. The program will feature officials of the state and national Guernsey organizations. Earnest Sass, Hopeston, is president of the state association and H. C. Horneman, Danville, secretary.

-M-

The Extension Messenger
COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

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Best Hens Still Pay A Tidy Profit When Others Lose

Illinois hens that were given a chance held up their end of the farm earnings under the stress of 1930 conditions by paying average profits of $1.61 a hen. Records kept by 246 farm flock owners in cooperation with the extension service of the College of Agriculture, University of Illinois have just been summarized. The average profits of $1.61 a hen were paid by the one-third highest flocks in the group. In contrast, the one-third lowest flocks lost money at the rate of 59 cents a hen, while the average for the entire group of 246 flocks was a profit of 64 cents a hen.

Owners of the one-third highest flocks kept up their profits in the face of 1930 conditions by taking advantage of low feed costs, getting more eggs and increasing their efficiency generally, it was explained by H. H. Alp, poultry extension specialist of the college. Hens in the one-third highest flocks laid an average of 135 eggs each during the year, while those in the one-third lowest flocks averaged only 111 eggs. The average egg yield for the 246 flocks was 126 eggs a hen. There was an average of 197 hens in the one-third highest flocks, 139 hens in the one-third lowest and 185 hens in the 246 flocks.

Feed costs in the one-third highest flocks totaled $2 a hen as against $1.99 a hen for the entire group of 246 flocks and $2.17 a hen for the one-third lowest flocks. However, the feed cost for each dozen eggs was five cents less in the one-third highest flocks than it was in the one-third lowest flocks. It took 18 cents worth of feed for each dozen eggs in the one-third highest flocks, 23 cents in the one-third lowest flocks and 19 cents as an average for the entire 246 flocks. These figures include feed cost of growing young stock.

The one-third highest flocks returned $1.07 for each hour of labor spent on them while the one-third lowest farms paid only 6 cents for each hour of labor and the entire 246 farms 53 cents for each hour.

-M-

Farmers To See How Treatments Boost Value Of Land

Soil treatments which in one case increased the value of land from $273 to $449 an acre will be explained to farmers in a series of meetings which the College of Agriculture, University of Illinois will hold on five of its soil experiment fields, June 22 to 26. The schedule is: Bloomington, McLean county, June 22; Hartsburg, Logan county, June 23; Aledo, Mercer county, June 24; Kewanee, Henry county, June 25, and Minonk, Woodford county, June 26.

Each of the meetings will start at 1:30 p.m., and representatives of the College will be present to explain the experimental work and show farmers how they can use the results for getting better paying crop yields on their own farms. The meetings will be open to all interested.

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Farmers Now Go Right On Meeting During Busy Summer

Farmers and their families used to think they could not afford to take time for meetings during the busy summer months, but this too, is now an old-fashioned idea, according to D. E. Lindstrom, assistant in rural sociology at the College of Agriculture, University of Illinois. The feeling among them now is that they can not afford not to have meetings during the summer months. Already farm organizations in eleven counties are making plans for summer meetings, and the idea is growing, he reported. The counties include Adams, Jersey, Pike, Champaign, Macon, Monroe, Effingham, Henderson, Ford, Schuyler and Livingston.

Regular program committees of the county organizations have been working on the meetings and in some of the counties have planned the programs in detail. Most of them include community singing, reports on farming and homemaking projects which different members are carrying on in cooperation with the extension service of the agricultural college, 4-H club work, topics of current interest, and an informal social hour with refreshments.

Even with more meetings being held by farm people, there is no shortage of live topics about which to talk, Lindstrom said. For one thing, June is a harvest-planning month. Such things as harvest labor and wages, prospects as to prices and favorable times for marketing can always be counted upon to stir up lively discussions. June also is the month to plan the annual county-wide picnic. The best plan is to give each unit of the county organization some part in making up the picnic program. Legislation of interest to farmers is another headliner for June meetings. Right now, income tax proposals are getting a lot of attention. Cultivation of corn is another live issue for this season of the year, especially when it comes to a discussion of the kind of power to be used. Farm accounts, soil testing and reports from delegates who attended the 4-H club tour at the University of Illinois undoubtedly will have a place on many programs of June and July meetings.

Summer time moves many meetings outside on lawns, Lindstrom said. Several units of the Champaign County Farm Bureau hold all three of the summer meetings in the front yards of different farm homes.

-M-

Prime Lambs Pay Farmer Added Profit Of $2.80 A Head

Added profits of $2.80 a lamb have been pocketed by Harold Shepard, an Edwards county farmer, as his premium for raising prime spring lambs, it is reported by E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois.

Shepard got an average of $8.40 for each lamb which he included in the first consignment of graded lambs marketed from Illinois this year. He had seven, five of which were prime and averaged 82 pounds on the St. Louis market at $11 a hundredweight and two choice, averaging 64 pounds at $10.65 a hundredweight. No other consignor had prime lambs. The other 14 lambs in the truck load ranged from culls up to choice and brought from $7 to $10.75 a hundredweight, or an average of $5.60 a lamb. The $2.80 more which Shepard got for each of his lambs amounted to 50 percent more than the average returns from the other lambs, Robbins pointed out.

Shephard's lambs were well-bred and well-fed, according to Robbins, who saw them. Besides this, their tails were docked. There were no buck lambs among the seven, all of them being wethers and ewes. Shepard's case proves the importance of selecting thick, short-legged breeding sheep and then trimming the lambs to suit market requirements and feeding them well so that they will be really fat, Robbins said.

-M-

Mange Is Gaining Foothold As Pig Menace In Illinois

Mange in pigs, a disease which can take a heavy toll in profit, is slowly gaining a foothold on many Illinois farms, judging from the number of inquiries received by the College of Agriculture, University of Illinois during the past 60 days.

If pigs waste feed, gain slowly and their skin becomes rough and wrinkled, the disease may be present. However, a microscope is needed to detect the mange mites. If affected pigs are on pasture, the symptoms are not always pronounced, but when such pigs are put in the feedlot this fall, they will make unsatisfactory gains.

Now is the time to treat pigs before the disease gets a foothold, according to Dr. W. A. James, assistant in animal pathology and hygiene. One part of lime and sulfur dip to 30 parts of water is one of the most efficient preparations for the control of mange mites. Houses and lots including fence posts and gates also must be cleaned and disinfected. The lime and sulfur dip can be prepared by farmers, but veterinarians can supply the concentrated materials.

An improvised dipping tank made out of 60-gallon barrels has been employed on many farms for dipping pigs. If only a few litters are affected, hand treatment with a brush is satisfactory. It often is necessary to repeat the treatment to exterminate the disease in many herds. However, repeated dipping during the summer will pay in feed saved and in increased profits from hogs marketed this fall.

Veterinarians in different localities of the state can give more detailed information on the control of this parasitic disease, Dr. James recommended.

-M-

Wide Range Found In Stand And Yield Of Soy Varieties

Varieties of soybeans vary widely in stand when seeded at the same rate in drill rows, but variations in stand do not influence the yield of all varieties alike. This has been brought out in further studies of the problem by C. M. Woodworth, chief in plant breeding at the College of Agriculture, University of Illinois. Five varieties, Ilsoy, Wilson V, Peking, Virginia and Illini were planted in rows with the drill set to sow at the same rate for each variety. Sixty-four one-foot sections of row of each variety were compared for variations in stand and yield.

In the case of the Peking variety there was a gradual upward trend in yield as the number of plants in a one-foot section increased. The highest yield was produced by a single section containing 26 plants. Seventeen plants a section gave as high a yield of this variety as any higher number of plants up to 25.

In the Wilson V variety a single section with 12 plants yielded highest. With this exception sections with 10 up to as high as 30 plants yielded about the same.

The trend in yield in the case of the Virginia variety was upward as the number of plants a section increased. The highest yield was from sections containing 17 and 19 plants. Hence, it would be assumed that seedings of this variety should be at this rate in order to give the highest yield.

The highest yield of the Illini variety was from sections containing 11 plants. There was considerable variation in the Ilsoy variety, the highest yield being produced by a section with 13 plants. Sections containing 12 plants a foot yielded about as well, on the average, as any sections with more than that number.

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Illinois' Many Forest Fires Taken As Necessary Evil

Illinois has plenty of forest fires, but not much of a stir is created by them because they are taken as a matter of course, says L. E. Sawyer, forestry extension specialist of the College of Agriculture, University of Illinois and the Illinois State Natural History Survey. Practically the entire timbered area of the state burns over periodically, he said. Many of these wooded areas are set intentionally by the owners, many are set accidentally by hunters and campers and still others are fired from adjacent fields that are being burned over in the spring of the year.

A fire in the farm woods not only destroys much valuable standing timber, but kills the young growth, increases soil erosion, reduces stream flow and the flow of springs during dry weather. In addition, a fire will reduce the fertility of the woodland soil and may burn the fences and buildings. Continued burning of many areas of farm woods is directly responsible for high waters and floods so prevalent through parts of the United States.

Protection of the average farm woods is a comparatively simple matter, for the majority of them are so located that they can be reached quickly in case a fire breaks out. A fire line is easily built and will prevent fires which start within the area from spreading over the entire piece and also will prevent fires from the outside entering the area.

A fire line consists of a strip of ground that has been plowed up, disked or in other ways broken until the mineral soil is exposed. In Illinois this strip should be from five to eight feet wide. A line of this type should first be constructed around the entire stand of timber and then the area itself divided into four or more portions by others of these lines.

An ordinary walking plow with a team, a gang plow with a tractor or a disk harrow, preferably of the cutaway type, may be used in building the fire line. Special fire line plows have been devised for use where large blocks are to be protected from fire. After the line has been plowed or disked around and through the farm woods, it is only necessary to run over the surface of it each year with a disk.

-M-

Costly Insect Damage To Stored Grain Could Be Reduced

Farmers in Illinois lose between 25,000 and 30,000 bushels of wheat annually through ravages of the granary weavil, the Angoumois grain moth and other stored grain insects, it is reported to the College of Agriculture, University of Illinois by J. H. Bigger, assistant entomologist of the Illinois State Natural History Survey. Much of this loss is preventable, he said. All grain bins and other storage rooms should be thoroughly cleaned before the new crop is put into them. The insects live in the grain refuse and dust in the corners and cracks. These places should be carefully swept and brushed out. The bins should then be scrubbed. Hot strong soap suds or lye water are good materials with which to wash the bin. After the grain is stored the bin should be closed as tightly as possible without destroying the circulation. Screening with fine mesh wire is a good way to do this.

-M-

Small Grains No Match For Corn And Legumes As Feed

With new wheat starting below 50 cents a bushel, oats around 25 cents, barley around 35 cents and corn about the same price as new wheat, all grains are now on a feed basis so far as price is concerned, says R. R. Hudelson, extension specialist in farm organization and management at the College of Agriculture, University of Illinois. However, small grains like oats, wheat and barley can not compete with corn and legumes as feed producers, he pointed out.

With 100 pounds of digestible nutrients in oats or wheat costing around $2.50 as against $1.30 in corn and about $1.05 in clover hay, the disadvantage of small grain crops is clearly evident. One small grain in a crop rotation is necessary as a nurse crop, but it seems clear that few if any crop rotations in central Illinois can economically contain more than one small grain.

Figures kept by account-keeping farmers in Champaign county showed that it cost them $1.31 a hundred pounds to produce digestible feed in corn, $2.51 a hundred pounds in oats, $2.45 a hundred pounds in wheat and $2.15 a hundred pounds in soybean seed. These costs are figured with no allowance for the feed in the straw and stover. Of the four crops named, oats straw contains more digestible feed than the straw or stover of the other crops. This, together with a greater palatability of oats straw, makes oats better than wheat from a feed standpoint. Oats has the added advantage of following corn conveniently in the crop rotation, while wheat can not be sown after corn satisfactorily.

Soybeans as used for seed production have cost about $2.15 a hundred pounds for the digestible feed contained in the seed. This is cheaper than the digestible feed in wheat or oats by about 35 cents a hundred pounds. Soybeans also have the advantage of containing more protein, which commands a higher price.

Soybeans and other legumes, however, furnish feed cheaper in the form of hay than in seed. A two-ton crop of clover gives about a ton of digestible nutrient at a cost of about $1.05 a hundred pounds.

-M-

Cost Of Growing 1930 Corn Totalled 60 Cents A Bushel

It cost 60 cents a bushel, or more than the crop is now bringing, to grow corn in 1930 in the heart of the corn-producing counties of Illinois, according to results of cost studies made by the farm organization and management department of the College of Agriculture, University of Illinois. This cost was on a group of farms where the crop was hand-picked. Costs were somewhat higher on a few farms in the same counties where mechanical corn pickers were used.

Costs were 10 cents a bushel higher in 1930 than in the two preceding years, largely because the drouth reduced yields. The crop averaged only 39.5 bushels an acre in 1930, as compared to 50 bushels an acre in 1928 and 1929.

The average cost of 60 cents a bushel includes a rental charge equal to 5 per cent on capital in land valued from $150 to $200 an acre. Farm labor in growing the crop cost 25 cents an hour and horse labor 13 cents an hour. These were considerably lower labor rates than prevailed the year before and resulted in very materially lowering the cost of growing an acre of corn over the previous year, according to R. H. Wilcox, of the farm organization and management department, who was in charge of the studies.

-M-

Grain Profits Now Too Slim To Let Rats Damage Crop

At present prices for grain, farmers can ill afford to take any more losses by letting rats damage the crop, says G. C. Oderkirk, rodent specialist of the Federal Biological Survey, who is cooperating with the Illinois State Natural History Survey and the College of Agriculture, University of Illinois. Now is the time to discourage these pests from harboring in or near corn cribs and other buildings during the fall and winter months, he recommended. This can be done by cleaning away old lumber and rubbish and removing or leveling the dirt thrown up by rats beneath the floors of buildings.

Before corn cribs and granaries are filled, repairs should be made with rat-proof building material wherever possible. Using concrete, meshed wire, and sheet metal in building or remodeling corn cribs and granaries will prevent mice as well as rats from damaging stored grain. Although it costs more to use such materials, there will be enough savings in a few years to more than pay for the added cost of making buildings rat proof.

Rats and mice cause severe losses to sacked grain and feed which can be reduced or entirely eliminated by making a small feed room rat-proof. Suggestions for rat-proofing are contained in Farmers' Bulletin 1683, which may be had without cost from county farm advisers or the Illinois State Natural History Survey, Urbana.

-M-

Quality Will Set Size Of Profits On Summer Apples

Southern Illinois' crop of Transparent and Duchess early summer apples is in excellent condition, it is reported by R. S. Marsh, horticultural extension specialist of the College of Agriculture, University of Illinois. The trees are vigorous and the fruit has been thinned so that good size is assured when the crops are harvested. The first carlot of Transparents was shipped June 16.

"Tub bushel baskets with liners and pads will be the popular package for summer apples this season. Neatly faced apples showing no bruises should find a ready sale at a fair price on the market.

"These early summer apples should be carefully handled during harvesting and packing, as they bruise easily. Research work in 1928 showed Duchess to be worth 20 cents more a bushel when hand-graded than when machine-graded, because of the bruising from the grading machinery. Hand-grading and careful picking will enable growers to put a product of superior appearance on the market.

"Some growers are planning to use a brush or wiper on these summer apples so they will be clean and attractive. Brushing summer apples is a questionable practice and can not be recommended because of their susceptibility to bruising. The tender skin of these summer varieties also would be subject to injury."

-M-

Illinois Peach Crop Freer Than Usual From Curculio

Thanks to the drouth of last summer, the 1931 peach crop, judging from present indications, will be freer than usual from worms of the plum curculio, it is reported to the College of Agriculture, University of Illinois by S. C. Chandler, assistant entomologist of the Illinois State Natural History Survey.

Under the circumstances, it will not be worth while to apply more than the number of sprays called for by the Illinois spray schedule. No poison spray need be applied during June after the first three regular applications of the season have been put on. Some growers are questioning the necessity of using arsenate of lead in the month-before-harvest spray. Further information on this will be issued later after a study of the situation has been made just previous to harvest, Chandler said.

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Timely Notes for Farm Advisers and others from the Agricultural College,
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Farm Folks Taking To Acting Urge In One-Act Plays

The farm folks in Illinois are "falling" for the universal urge of acting, says D. E. Lindstrom, assistant in rural sociology at the College of Agriculture, University of Illinois. In a new circular which he has just written on the subject, "Dramatics for Farm Folks", he reports that plays, particularly one-act ones, are coming to form an important part of many country community programs. The circular was prepared as a manual for use of rural groups desiring to produce one-act plays.

An increasing number of appropriate plays, better means of communication and a growing desire for group entertainment make it possible for play production to form an integral part of the social life of every rural community, the circular points out. The chief obstacle confronting rural groups wishing to produce plays is a lack of knowledge of the necessary steps.

Those with a tendency to take play production too lightly must be cautioned that few entertainments can be quite so terrible as bad amateur dramatics, nor can anything be quite so delightful as an amateur play produced even with the simplest skill, the author points out.

Some of the steps necessary in putting on a play which are outlined and discussed in the circular, are: finding a suitable play, selecting a competent director, organizing a working production staff, choosing a suitable, willing cast, getting a thorough understanding of the play, making rehearsals count and obtaining adequate stage properties, lighting, costumes and makeup facilities.

-M-

This A Good Year To Put Up Sheaf Oats For Feeding

Low prices for new oats combined with a hay acreage which is much below normal makes this a good year in which to cut down on the threshing and feed bills by making and storing sheaf oats, according to E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. Sheaf oats will take the place of both hay and grain for horses and other farm stock. They will make a fine feed to use along with soybean hay, a large acreage of which will be cut this year.

The oats should be cut as soon as they are ripe enough to cure out soundly in the bundle. Good sheaf oats can not be made from fields in which there is an extra heavy growth of sweet clover. The green cut sweet clover moulds in the butt of the bundles. Sheaf oats should preferably be stored in the mow. Piling them so that they do not come in contact with hay stored in the mow or with the side walls will do much to keep down mouse damage. Hydrated lime scattered over the bundles at the rate of about 7 pounds for each ton of bundles as they are put away also discourages the mice. Last year's sheaf oats are still being fed to horses on the college farm. They eat them with a relish, since there is no taint of "mousiness."

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Plant Lice Will Be Attacking Vegetable Crops Soon

From now on for the rest of the season, vegetable growers must be prepared to repel attacks of plant lice, or aphids, or else take a loss on their crops, according to a warning by Lee A. Somers, vegetable gardening extension specialist of the College of Agriculture, University of Illinois. During July the melon aphids, which attack muskmelons and cucumbers, are almost sure to appear in large numbers. In August and September the turnip aphids are almost sure to be thick.

"Since aphids are sucking insects they can not be controlled by stomach poison but must be controlled by a contact insecticide. The principal one is nicotine sulfate, more commonly known as Black Leaf 40. Contact insecticides must hit the insect to do their work. This is difficult unless the sprayer or duster is equipped with an upturned nozzle, since aphids usually are on the lower surface of the leaves.

"Whether Black Leaf 40 shall be used in the form of a spray or a dust depends entirely on the equipment at hand. If there is a fan or a bellows type duster with upturned nozzle, the dust should be made of 1 pound Black Leaf 40 and 18 pounds hydrated lime. These may be mixed in an old churn or other enclosed vessel. Adding a dozen or more smooth pebbles will break up any lumps that may form. If the spray is to be used, it should be mixed at the rate of 1 large teaspoonful of Black Leaf 40 to 1 gallon of water. Adding a half teaspoonful of Penetrol to this mixture will give much better control."

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Cultivating New Trees All Summer Hastens Fruiting

Any new fruit trees which Illinois orchardists may have planted within the past three or four years will come into profitable bearing sooner than they otherwise would if they are cultivated throughout the summer, says W. A. Ruth, chief in pomological physiology at the College of Agriculture, University of Illinois. This is contrary to the practice with old trees. Cultivating old trees in the early growing season seems to be enough. However, habits of growth in young trees and in old trees are different. While old trees characteristically form short shoots, many of which form their terminal buds by the time the trees bloom, young trees grow rapidly and often keep growing into the late summer.

Encouraging shoot growth in young trees is important, because the trees that grow best at that period come into profitable production soonest. It is not necessary to cultivate the whole orchard. In fact, it is better to hoe a circular space under each tree. The hoeing should be shallow and the space need not be large. The rest of the orchard can be used for another crop. This will avoid the serious erosion that comes from cultivating the entire middles.

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Green Wheat Or Oats Will Make Up For Shortage Of Hay

Farmers whose short supply of last year's hay is gone can now provide cheap forage of fine quality by cutting either green wheat or oats for hay, says E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. One farmer, John T. Smith, of Champaign county, is mowing enough green wheat to make sufficient hay to last until soybeans are ready for hay next fall.

"Small grain crops to be cured for hay should be cut with the mower after they bloom but before the field turns yellow. The early milk stage of the grain is about right for the best quality hay. Bearded wheat cut at that time has soft beards which are not objectionable.

"Hay made from wheat or oats is not as nutritious as hay from legumes, but is better than hay from most grasses. The acre yield is relatively large. On a farm where early hay is needed, a few acres of wheat or oats used in this way may pay better this year than the threshed grain."

In This Case One Tomato Worth More Than Pair Of Them

One good tomato is worth more on the market than a good one and a bad one together, says J. W. Lloyd, chief in olericulture at the College of Agriculture, University of Illinois. It pays to grade tomatoes and work up a special trade for a high-class product, he recommended.

"Too many tomatoes are sent to market that are really not marketable. What is worse, they usually are mixed along with the marketable stock and thus seriously interfere with the sale of the good tomatoes. Some people persist in hauling or shipping to market nearly all the tomatoes they pick, regardless of the fact that many are misshapen, small, badly cracked or even leaking, and then wonder why the price of tomatoes is low.

"A few enterprising growers catering to a special market have been able to get good prices for the tomatoes they sell, even when the general market is overloaded with ordinary stock and prices generally are low. However, they do not attempt to market any but good tomatoes and these are carefully graded and packed. All the poor tomatoes are sorted and kept at home where they are fed to the hogs and poultry. By following this plan these growers have been able to hold their high-class trade and make good money out of their tomato crops even when some growers have had to practically give their tomatoes away."

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Gives Plan For Overcoming Trouble In Fall Gardening

Seeds in the fall home vegetable garden will germinate even in the dryest weather under a plan given by Lee A. Somers, vegetable gardening extension specialist of the College of Agriculture, University of Illinois. This is especially welcome information this year, because gardens are being called upon to do extra heavy duty. The most common complaint in fall gardening is that it is hard to germinate seeds during dry weather.

Fortunately, the trouble can be overcome in the small area usually devoted to the fall garden. First, a fine seedbed firm and free from lumps is made with a mulch of fine soil on the surface. Capillary moisture is always near the surface of such a bed. The seed furrows are made just as though there was plenty of moisture in the ground. The bottom of the furrow is moistened thoroughly from a pail of water and the seed planted immediately in the wet soil. The soil is then covered lightly with the fine soil from the ridge, care being taken not to pack the soil. A board is then placed lengthwise on each row. This acts as a mulch to hold the moisture in the furrow. Under this method germination may be obtained even during the most severe drouth. The boards are taken off as soon as the seed has germinated.

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Thousands Of Communities Lack Convenience And Beauty

Failure to coordinate their living, working and playing requirements has cramped thousands of American communities and left them lacking in convenience, order and beauty, Professor Karl B. Lohmann, of the landscape architecture division, College of Agriculture, University of Illinois, points out in a new book, "Principles of City Planning," published by the McGraw-Hill Book Company, New York.

Professor Lohmann, interested for a number of years in efforts to improve urban conditions, has brought together from his experience facts relating to the design and improvement of streets, parks, playgrounds, airports, transit, transportation, public buildings, building groups and similar problems confronting American villages, towns and cities of today.

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The Extension Messenger
COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

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Better Tenant Methods Would Hasten Farm Prosperity

With more Illinois farms than ever before in history being operated by tenants, one key to a more prosperous agriculture for the state is the better organization of these farms, says H. C. M. Case, head of the farm organization and management department, College of Agriculture, University of Illinois. Studies which the college has made show that within the same community there is a difference of more than $10 an acre in net returns on different tenant farms. Slightly more than 43 per cent of all farms in the state are run by tenants.

Farms operated by tenants on the average produce lower crops yields and keep less livestock than owner-operated farms, Case reported. This means that the total income an acre is less on tenant farms than on owner-operated ones. Of equal interest is the fact that tenants as a group operate their farms with less labor cost, less equipment cost and less total expense than owner-operators in the same community who are selling their products on the same market.

Tenant farms as a group make a larger net return an acre than owner-operated farms. However, when the net income is divided between the two parties, there usually is not enough to leave either party entirely satisfied. It is to be expected that yields on tenant farms are declining with a small amount of livestock being kept. Within the past twenty years, even the best soil has begun to show the effect of continued cropping where little effort has been made to maintain or improve the soil. This is especially noticeable on many grain farms that have been rented a long time.

It is hard for many land owners to make much improvement on tenant farms at the present time. They are faced with a reduction in crop yields, low returns for crops sold and if the farms are to be placed on a more profitable basis, it usually will mean some additional outlay of capital. However, something can be accomplished through better organization of tenant farms, as shown by the records where tenants and owners have worked together to develop a better system of farming.

-M-

Peaches Will Not Need Lead Sprays Prior To Harvest

Unusual scarcity of curculio will make it safe to omit the usual arsenate of lead sprays one month before harvest in nearly all Illinois peach orchards, according to H. W. Anderson, associate chief of pomological pathology at the College of Agriculture, University of Illinois, and W. P. Flint, chief entomologist of the Illinois State Natural History Survey. However, three weekly applications of some sulfur spray or dust should be put on between a month before harvest and harvest, they recommend.

"These sprays should contain a wettable sulfur at the rate of 6 pounds of actual sulfur to 100 gallons. The standard brands of ground sulfur or flotation sulfur should be used. Dry mix sulfur lime, not dry lime sulfur, may be used in the first application, but since this contains lime, the appearance of the fruit may be marred by using it later. Under no conditions should liquid lime sulfur, dry lime sulfur or bordeaux mixture be used on peaches."

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Dried Pastures Challenge Feeding Skill Of Dairymen

Hot sun and winds during the latter part of June have played havoc with pastures in Illinois, says C. S. Rhode, dairy extension specialist of the College of Agriculture, University of Illinois. Dairymen consequently will be called upon to do some skillful feeding if they successfully meet present conditions with a narrow spread between feed prices and the price of dairy products, he pointed out.

It is impossible for high-producing cows to get enough from average pastures this time of year to maintain a high level of production and at the same time keep in good physical condition. Furthermore, care of cows during the summer has much to do with their production during the rest of the year. Cows poorly fed in summer can not be expected to produce efficiently in winter. If pasture alone does not keep the cows in good working condition and maintain milk production at an efficient level, additional feed will have to be supplied.

Largest net returns will be obtained by feeding according to production at all times. A grain mixture supplying 12 per cent protein is sufficient when the cows are on good, green succulent pasture. However, the grain mixture used to supplement pasture that is dried up should contain about 18 per cent protein.

Heifers, especially, can not be neglected during the summer months, for they are the making of the dairy herd of tomorrow, Rhode pointed out. The chief aim in feeding heifers is to develop them into large cows with strong constitutions at as low a feed cost as possible. Growth should not be sacrificed for more economical feeding. Pastures may not furnish heifers with enough nutrient for best growth. Any properly balanced mixture for the milking herd may be used for the heifers.

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Wheat Is Giving Fine Results For Illinois Feeders

Wheat, which is still on a feed basis so far as price is concerned, is giving fine results for Illinois farmers who are feeding it to hogs and cattle, it is reported by E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. Their success is in line with experiment station tests which always have shown that wheat is a good feed. It gives best results when coarsely ground. It may be fed to hogs either dry or wet.

Out of 111 hog reports sent to Robbins, a total of 42 farmers reported feeding wheat in amounts ranging from "some" to 2,000 bushels. The 36 who reported the amount, fed a total of 9,020 bushels, or an average of 251 bushels each. Two fed the wheat whole and 39 fed it ground. Seven fed it wet and 31 fed it dry in self feeders. One reported poor results, two, fair; twenty-three, good or equal to corn, and seven, fine, very good or better than corn.

Wheat gives good results even if it replaces all the corn in the ration for hogs or half the corn for cattle. Feeders can afford to pay the same price for a bushel of wheat as for a bushel of corn for hogs or cattle, in the opinion of Robbins. He assumes that there will be an additional charge of perhaps 10 per cent of the original price for grinding the wheat.

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Skimping on Feed Delays Profits on Growing Poultry

Many poultry flock owners who short-ration their growing flock during the summer can not use feed prices as an excuse this year, says H. H. Alp, poultry extension specialist of the College of Agriculture, University of Illinois. Suitable home-mixed rations can be mixed in many cases for as low as $1.50 a hundred pounds this year, he said.

Being stingy with feed slows up growth of young stock. Cockerels fed all they would eat weighed 5.73 pounds at 24 weeks of age, while cockerels fed only 18 percent of all they would eat weighed but 1.02 pounds at 24 weeks.

Although chickens may be grown to maturity on an all-mash ration, this may not be practical under farm conditions. The all-mash ration has served its most useful purpose by the time the chicks are eight weeks old and it may well be supplemented with grain from that time on. Grain feeding may be started as soon as the chicks are big enough to eat wheat. Shelled corn may be included in the grain mixture as soon as the chicks are old enough to eat it.

The best proportions of grain and mash for rapid and economical growth at different ages are: 6 weeks - 5 per cent grain, 95 per cent mash; 8 weeks - 10 per cent grain, 90 per cent mash; 10 weeks - 20 per cent grain, 80 per cent mash; 12 weeks - 30 per cent grain, 70 per cent mash; 14 weeks - 40 per cent grain, 60 per cent mash; 16 weeks - 50 per cent grain, 50 per cent mash; 18 weeks - 60 per cent grain, 40 per cent mash, and 20 weeks - 70 per cent grain, 30 per cent mash, and 22 weeks and older, 75 per cent grain and 25 per cent mash.

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Night Pastures Cut Horse Costs, Build Up Efficiency

With horses doing a big share of the farm work in Illinois this year, it will be cheaper and will keep them more comfortable to turn them into pasture on summer nights, says E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. A small pasture near the barn is a great convenience for this purpose. The horses cool off during the night and drink water as they need it. Usually they keep much cleaner than when confined in their stalls.

When the horses are turned out, the stables are cleaner and have less flies. There also is less currying to do. The fact is that men who work six, eight or twelve horses in one team clean only the shoulders, necks and backs of their horses. Horses turned out at night maintain a fairly neat appearance even with this little currying.

Feed which the pasture saves is a big item in a season. With the horses in the pasture for the night, they are left there the next day unless needed for work. This saves grain and agrees with the horses. They need less grain anyway when idle so as to avoid azoturia, a disease which kills many horses which are full fed in stables while idle for a few days. Horses like to gather their own feed in the pasture. That feed is cheaper than grain and hay which has taken labor in cultivating, harvesting, storing, and feeding.

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Discover Serious Grain Disease In Illinois Fields

Discovered for the first time in Illinois, "take-all," a destructive disease of small grains, has been found this season in four Edwards county rye fields, it is announced by Dr. Benjamin Koehler, assistant chief in crop pathology at the College of Agriculture, University of Illinois.

Wheat, barley and rye, of which Illinois grows a total of about 2,700,000 acres, all are attacked and heavily damaged by the disease. It causes a rot of the roots and base of the stems. Plants begin to die early in the spring and others die at various stages of development up to harvest time.

There were fine stands of grain last fall in all four of the fields in which the disease was discovered this season, but by harvest time this summer the disease actually took all in one field, less than one head of grain to the square yard being left. The farmer was convinced that it would not pay to harvest the crop. In the second field the loss was about three-fourths and in the other two, about one-half.

The disease was known to occur in a number of other states, notably Kansas and New York, before it was found in Illinois. A serious new disease discovered in Madison county in 1919 was thought to be take-all, but it later proved to be a virus disease which was entirely unknown up to that time.

The virus disease, which has been named rosette, is now being controlled effectively through the use of resistant varieties, but a control for the real take-all has not yet been found, Dr. Koehler said.

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Country's Plant Doctors To Tour Southern Illinois

The country's "plant doctors," members of the American Phytopathological Society, will study fruit diseases in one of the most interesting fruit and vegetable sections in the United States when they meet at Cairo, Ill., July 28, for their third annual summer tour and plant disease conference, it is announced by Dr. H. W. Anderson, associate chief of pomological pathology at the College of Agriculture, University of Illinois and chairman of the event.

There are 750 members of the society, all of whom are interested in plant disease problems, and more than 100 of them are expected to participate in the tour and conference. It will end at Vincennes, Ind., July 31. Cities on the route of the tour include Carbondale, Harrisburg, Carmi and Grossville, Ill., and New Harmony, Ind., in addition to Cairo and Vincennes.

Adding interest to the route of the tour is the fact that it includes the home of the late Parker Earle, the first man to ship fruit to market in refrigerator cars, and F. S. Earle, his son, famous for his collections of new species of fungi. Other attractions are the scenic country along U. S. route 51, some of the country's largest peach and apple orchards, the historical Rappite settlement of New Harmony, the effect of extremely low temperatures during the winter of 1929-30 and the effects of the drouth of 1930.

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Livestock Lease Is a Profit Booster On Tenant Farms

Livestock leases are the key to bigger profits on Illinois' high percentage of tenant farms provided both landowner and tenant have confidence in each other, know the best farm practices and are willing to follow them out, said H. C. M. Case, head of the farm organization and management department, College of Agriculture, University of Illinois. The question of accepting a livestock lease hinges upon how efficient the operator will be in handling livestock.

"It must be recognized that in many cases land is producing much less than formerly throughout the corn belt and that some means must be adopted for improving the soil. Every farmer knows that livestock farming is one way in which this can be done and done perhaps more quickly than without livestock. There is the additional incentive of getting increased income when livestock is well handled. Many grain farms which need improvement at the present time will necessarily require the spending of additional money in building up the soil and providing more equipment if more livestock is to be produced.

"Under these conditions landlords and tenants who are considering the livestock lease would do well to consider how economically they can equip their farms for handling livestock and to consider carefully the kinds of livestock which they can best introduce from the standpoint of the farm itself and the market outlet for the product. There are many farms where the livestock lease is a success from the standpoint of both parties. This speaks well for developing more livestock leases where the landlord and the tenant have confidence in each other and are willing to give the added attention required for developing a system of livestock farming as compared with a system of grain farming. It must not be overlooked, however, that a system of livestock farming with the stock poorly handled is less profitable than grain farming."

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New Fruit Moth Threatens Little Damage This Season

There is little chance of serious fruit infestation this year from the oriental fruit moth, which is a newcomer among Illinois orchard pests, although with favorable conditions as in 1929 there is some possibility of commercial damage just before peach picking, W. P. Flint, chief entomologist of the Illinois State Natural History Survey, has reported to the College of Agriculture, University of Illinois.

This was the agreement of entomologists of Kentucky, Illinois, Indiana, and the federal fruit insect laboratory at Vincennes, Ind., as a result of field observations at a conference recently held at Vincennes, he said.

Present conditions show slight infestation of twigs with indications of gradual increase under somewhat unfavorable seasonal conditions.

Clipping of infested twigs, even in moderate infestations, is not a practical means of checking fruit worm abundance, the entomologists agreed. Experiments indicate the possible value of dusting. The usual fungicide dust for brown rot, applied three weeks before harvest, followed by a second application one week before harvest will have some value in limiting late injury to fruit by the worms. The new Illinois 60-40-5 sulphur-lime-oil dust has given better protection against the fruit moth than the usual fungicide dust and also controls brown rot.

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Surplus Of Fruit Has Put Premium On Quality Crops

There are prospects for a surplus of small fruits this year, and only high-grade products will sell at a profit to growers, says A. S. Colby, chief in small fruit culture at the College of Agriculture, University of Illinois.

Many buyers want large strawberries, although some medium-sized varieties of superior flavor are gaining popularity. Black raspberries are still in demand, but the public is becoming more accustomed to the reds each year. Dessert quality is sacrificed somewhat for shipping quality where distance markets are concerned. However, the Blakemore strawberry is a new variety which appears to carry well in shipments and holds up much better than the older varieties when canned. The Poorman gooseberry is being found superior to the older sorts by a number of Illinois growers. The Latham red raspberry is being extensively planted in this state. It is a good shipper and more productive and less subject to certain diseases than the older varieties.

Even quality varieties can not produce quality fruit unless they have good care as regards cultural operations, including tillage or mulching, protection from insect pests and intelligent pruning and training.

Next, the fruit must be picked at the right stage of development and placed, not thrown, into clean baskets which should be filled out well to the corners. If the fruit is to be shipped to a distant market, it should be picked a trifle early. Picking should be done in the morning before the sun is high and hot. The fruit should be placed in a cool place. The hot sun and wind will scald raspberries and gooseberries and turn blackberries red.

The more perishable fruits like red raspberries usually are packed in pints. No small fruit should be packed in packages larger than quarts unless jam is wanted, Colby said. Transportation to market must be carefully done. Short distances, smooth roads and good springs are essential. The crates should be covered with white canvas or similar material to keep the berries as cool and free from dust as possible. The crates should not be allowed to slide around or some of the berries will be crushed.

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School Buildings Become Target Of White Ant Damage

White ants, or termites, which are doing between four and five million dollars damage every year to buildings in Illinois seem to have taken a special liking for school buildings during the past few years, it is reported to the College of Agriculture, University of Illinois by W. P. Flint, chief entomologist of the Illinois State Natural History Survey. Report after report has come in from towns and cities in central and southern Illinois stating that school buildings, particularly high school buildings, were infested and being damaged by termites. In some cases the cost of repairing such damage has amounted to several thousand dollars, he said.

Many farm buildings, residences and business buildings, as well as school houses, have been hit in the extensive damage done by the insects. It could all be prevented by taking a few simple precautions when the buildings are erected, according to Flint. The Natural History Survey and the Experiment Station of the College of Agriculture, University of Illinois, have full directions for termite-proofing buildings. They also will give directions for combating or cleaning out termite infestations in buildings. In addition to riddling buildings, termites are causing heavy losses by attacking fence posts and other posts.

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Abstracts on the Wheat Situation

As the 1931 wheat crop is being harvested and plans being made for the 1932 crop, information regarding the world crop of wheat is of interest to Illinois farmers. The following materials have been abstracted from the sources indicated by R. C. Ross, extension specialist in agricultural economics at the College of Agriculture, University of Illinois. They are reproduced here without comment in order to bring pertinent facts to the attention of farm advisers, interested farmers, and farm leaders. Similar materials relating to other farm products will be issued from time to time.

Production and Carryover

(From World Wheat Prospects, June 30, 1931, Bureau of Agricultural Economics U. S. Department of Agriculture)

"The supply of wheat depends upon the carryover from the crop year now closing and the size of the new crop. Present prospects indicate a world carryover somewhat larger than last year, and a world crop substantially smaller. Altogether world supplies of wheat are likely to be more than 250 million bushels smaller than for the previous season. This is based on early indications, and later developments may be expected to necessitate revisions in the estimate." (page 1)

"Though no bumper crop is expected this year the very large stocks remaining in the exporting countries indicate a fairly large world supply even though yields should be very low in some countries." (page 2)

"In North America, due to the very poor condition of spring wheat in the United States and Canada, a reduction as compared with last year of about 200 million bushels in the total wheat crop is indicated despite a very large production of winter wheat in the United States. In Europe a total production a little larger than that of last year is to be expected, the increase amounting to perhaps 20 million bushels. Crops generally are larger in the importing countries and smaller in the exporting countries than they were in 1930." (page 3)

"For the five-year period 1923-24 to 1927-28 ten countries each produced an average of more than 100 million bushels of wheat annually. These countries in the order of their production during that period were as follows: United States, Russia, Canada, India, France, Argentine, Italy, Spain, Australia, and Germany. In 1930-31 Rumania and Turkey also exceeded 100 million bushels of wheat production and the order of the other countries was somewhat changed. (pages 4-5)

(From Foreign Crops and Markets, July 13, 1931, Bureau of Agricultural Economics, U. S. D. A.)

"Spring sowing in Russia to June 20 amounted to 235,486,300 acres compared with 212,506,000 acres at the same time last year. Of this spring wheat acreage amounted to 62,516,300 acres and barley and oats 56,833,000 acres. Full execution of the planned increase in Siberia is said to be impossible. Harvesting of winter wheat began in Crimea and the southern section of North Caucasus around June 22. Hot winds have deteriorated the condition of winter cereals somewhat in the eastern section of the middle Volga region but the entire region is reported average." (page 44)

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"Russian crop reports during the last half of June indicate deterioration of spring cereals and present outlook (July 9) for spring wheat is not promising." (page 43)

(From Foreign Crops and Markets, June 8, 1931, Bureau of Agricultural Economics, U. S. D. A.)

"Seeding of wheat and other grains in Argentina is progressing satisfactorily. Some reduction in acreage, notably wheat, is contemplated to the extent of 5 to 20 percent. Growers are reported to be hiring little or no additional labor this season. There appears to be some additional interest in the livestock phase of agricultural activity." (page 803)

Milling Quotas in Europe

(A milling quota is a means of protecting the grain producers in a country from severe foreign competition by limiting the proportions of imported and home-grown grain which can be used for milling purposes.)

(From Foreign Crops and Markets, July 6, 1931, Bureau of Agricultural Economics, U. S. D. A.)

"Four important wheat importing countries in Europe -- Germany, France, Italy, and the Netherlands -- now have definite milling quotas for domestic and foreign wheat ground into flour for domestic use. This form of government aid has been adopted and became effective only recently in Italy and the Netherlands. Italy, according to the present schedule reported effective July 2, 1931, required that 95 percent of domestic wheat be used in flour consumed within the kingdom. This regulation does not apply to products exported. In the Netherlands the wheat act which was passed on February 19, 1931 providing for a milling quota of 20 percent domestic wheat and 80 percent foreign wheat has been declared effective July 1, 1931.

"Though France has been using a milling quota of 25 percent foreign wheat since the last of April, this was increased to 30 percent on June 16. (French foreign wheat milling quota now 20 percent due to arrivals of new crop wheat from northern Africa and southern France.--same source July 13) Previous changes of foreign wheat allowed in the French milling quota were from 20 to 25 percent on April 29, 15 to 20 percent on April 18, and 10 to 15 percent on April 2. The 10 percent quota had remained unchanged since it was raised from 3 to 10 percent the last of July 1930. Germany's quota of 50 percent foreign wheat has been in effect since March 31, 1931 at which time it was changed from 35 percent foreign and 65 percent domestic, the rates which were to have applied until the end of May. Milling quotas announced at the end of January reduced the compulsory use of domestic wheat from 80 to 75 percent for February and March with 65 percent tentatively set for April and May (changed to 50 percent on March 31) and 50 percent for June and July." (pages 6-7)

"Other European countries which have been using milling quotas, according to reports from the Department of Commerce, are Belgium, Czechoslovakia, Sweden, Greece, Esthonia, and Latvia." (page 7)

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Illinois Poultrymen To Tour Famous Area In The East

Illinois poultrymen, who produce products valued at approximately $60,000,000 annually, will have a chance to visit one of the best poultry areas of the east to study marketing, hatchery operations and commercial egg production in a tentative tour being sponsored by the College of Agriculture, University of Illinois. The tour will be made by motor coach August 29 to September 6 with H. H. Alp, poultry extension specialist, in charge.

Those making the tour will leave here at 10:30 a. m., August 29, for Dayton, O., where the night will be spent. A scenic 250-mile drive between Dayton and Uniontown, Pa., will take up the second day.

Before proceeding to Washington, D. C., on August 31, the third day, the poultrymen will stop at a commercial poultry farm near Uniontown. A flock of 2,000 layers, part of which is trapnested, will be the chief attraction. Camp will be made for the night at Washington.

Before leaving Washington for the government experimental farm at Beltsville, Md., the poultrymen will make a short tour of the capital city. In the afternoon the party will proceed to New Jersey to visit a large commercial farm and hatchery. Camp will be made in the neighborhood of Rosemont, N. J.

The first and second stops on September 2, the fifth day of the tour, will be at a 5,000-bird breeding plant and at a large hatchery, both among the finest in New Jersey. The tour will then proceed to the New York city poultry and egg market. A short tour of the city also will be made.

Camp will be made in the vicinity of Gettysburg, Pa., following the close of the program for September 3, the sixth day. The itinerary includes stops in the morning at two New Jersey farms of considerable size and importance. Journeying westward the tourists will then stop at two of the outstanding poultry farms in Pennsylvania. There are flocks of 5,000 birds on each of these farms.

The day's travel on September 4 will be between Gettysburg and Pittsburgh, Pa. where the night will be spent. The following day a stop will be made in Ohio, after which the tour will continue so as to reach Urbana in good time the morning of September 6.

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Cheap Riddance of Rats Possible With Newer Methods

Fifty cents a farm is all that it costs with modern methods to clean rats out of a community and thereby save heavy damage and annoyance from these pests, says G. C. Oderkirk, rodent control specialist of the federal biological survey, who is cooperating with the College of Agriculture, University of Illinois and the State Natural History Survey. Red squill, a poison that kills rats and mice but is relatively harmless to cats, dogs, and other animals, makes this possible, he said. Applying control methods at the same time on all infested premises in a community is the best way to rid farms and other properties of rats.

Under a successful plan which has been tried the past year, red squill poison is mixed with tasty baits and distributed so that it may be used by everyone in a community the same day. Bait is furnished at actual cost, which amounts to about 50 cents for enough to cover the average infested farm. In these campaigns to date from 85 to 95 percent of the users have obtained the desired results.

Campaigns during the fall and early winter months should be planned well in advance to realize the most from the undertaking. The expense is negligible and produces a substantial saving for every community that rids premises of rats before they take up residence in buildings for the winter.

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The Extension Messenger

COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

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Volume XIV July 29, 1931 Number 30

Illinois Not Suited To Compete With Hard Wheat Belt

Illinois farmers can hardly hope to compete consistently with those in the West and Northwest in the profitable production of high-grade bread wheats, those usually classed as hard wheats, according to results of investigations made by the experiment station of the College of Agriculture, University of Illinois. There is, however, a large demand for soft wheat flour for biscuit, pastry and cracker making, and apparently the soft wheat grown in Illinois fulfills the requirements of the soft wheat flour trade. The investigations, which extended over a period of five years, were in charge of Robert W. Stark, formerly associate in crop production, and have just been reported by the college in a new bulletin, entitled, "An Investigation of the Quality of Illinois-Grown Wheat."

The investigation was prompted by the fact that during recent years there has been considerable criticism of Illinois wheat. This criticism has come largely from certain millers and grain dealers who formerly obtained considerable supplies of soft wheat from central Illinois. Now the major portion of the wheat grown in that area is hard. The critics report Illinois hard wheat is "mongrel," stating that under Illinois conditions hard wheat deteriorates and becomes neither hard nor soft, that it has too much of the characteristics of hard wheat to produce good soft wheat flour, that it is too soft to use in making a good grade of hard wheat flour.

Among the conclusions warranted by the results were that environmental conditions ordinarily existing in central and southern Illinois are not conducive to the raising of either hard or soft winter wheat which mills into strong flour as measured by standards used in the investigation. Seasonal and peculiar local conditions, however, cause numerous exceptions to this. Also, a few varieties of winter wheat seemed to maintain their ability to produce flour of good quality in spite of the unfavorable environmental conditions of central Illinois.

If the winter wheat grown on the DeKalb field is representative of that generally grown in the northern section of Illinois, then the baking quality of the flour milled from the winter wheat of that section usually can be counted on to be from good to excellent, the investigation revealed.

Hard spring wheat of high protein content which will mill into flour of excellent strength may be grown both in central and northern Illinois, it was found.

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Water Used Daily Makes Farm Hens A "Big Industry"

Fifteen thousand barrels of water drunk every day by Illinois farm hens bear witness to the fact that they have long since passed out of the sideline class of farm industries, says H. H. Alp, poultry extension specialist of the College of Agriculture, University of Illinois. With more than 28,000,000 chickens on its farms on January 1, 1930, Illinois had one-sixteenth of all the hens in the United States, he reported. The annual value of poultry products in the state is close to $60,000,000.

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Mounting Damage By Weeds Is Nipped By Right Mowing

Weeds now cause an annual loss of from $200 to $250 a farm in Illinois, and the damage is increasing, says J. J. Pieper, associate chief in crop production at the College of Agriculture, University of Illinois. Farmers can control most of the common weeds in pastures by mowing them at the proper time, he recommended. Usually there will have to be several mowings during the year in order to control all of the weeds.

"The time to mow is at the blooming stage, for all annual plants mowed then are destroyed and will not reproduce. Oats is an example. After weeds bloom and seed has formed, it is almost useless to try to eradicate them by mowing. Weeds mowed in the active growth stage will continue to send out new branches and in several weeks will look as if they had not been mowed at all. While mowing at the blooming stage will not kill the perennial weeds except in a few cases, it will prevent seed production. Biennial weeds like burdock, wild carrot and wild parsnip are easy to control if they are mowed just as they come into flower. This practice not only will prevent reproduction but also will kill biennial weeds.

"There should be an early summer mowing to get the annual weed grasses like squirrel tail and wild barley and also to control such mustards as pepper grass, shepherd's purse, hedge mustard and any other mustards which may be present. This early mowing also will dispose of curled dock and of hosts of other troublesome plants. Later on, weeds which are likely to be blooming in late summer should be mowed at that time. These will include ragweed, thistles and mullen. It may be necessary to mow a third time later in the season to get those plants which are late maturing or which have come up late in the season and have not bloomed until late in the year."

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Melon Pests Out Early As Threat Of Heavy Damage

Melon aphids are starting their attack earlier than usual this season and the danger of severe injury is that much greater, C. C. Compton, assistant entomologist of the Illinois State Natural History Survey, has reported to the College of Agriculture, University of Illinois. Present indications are that the pests may become serious on melons and other cucurbits within the next few weeks, he said.

First indications of injury will show up in scattering hills over the field where the edges of the leaves will begin to curl downward. With warm dry weather the aphids multiply very fast, and since certain individuals have wings, they fly or are carried to all parts of the field. A promising crop of melons can be severely injured, if not entirely destroyed, within a week or ten days if steps are not taken to check the aphids.

"A careful watch should be kept and control measures applied locally as soon as infected plants are seen. Every effort should be made to control the pests before the leaves on the terminal shoots curl enough to protect the aphids from insecticides. A dust containing 2.4 per cent actual nicotine is highly effective when blown against the aphids on the under side of the leaves. Nicotine as a spray also is effective when diluted in soapy water at the rate of 1 ounce of 40 per cent nicotine sulfate in 5 gallons of water.

"Whenever bordeaux mixture is being used to control fungous diseases the aphids may be killed at the same operation by adding 1/2 pint of 40 per cent nicotine sulfate to each 50 gallons of spray or, for smaller amounts, 1 ounce to each 5 gallons of spray."

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Sanitation Pays Illinois Poultrymen 31 Cents An Hour

Illinois poultrymen who used poultry sanitation and otherwise practiced good management got a return of 31 cents an hour more for their labor last year than flock owners who did not use sanitation, according to a summary of their records by H. H. Alp, poultry extension specialist of the College of Agriculture, University of Illinois. He cites this as further evidence that the difference between success and failure in poultry raising is largely one of good management, since sanitation is always part of good management.

Flocks handled under the recommended sanitation system paid their owners a return of 76 cents an hour for labor, while non-sanitation farms paid only 45 cents an hour. Owners of the sanitation and non-sanitation flocks were among the 246 in all parts of the state who cooperated with the extension service of the College of Agriculture, University of Illinois, in keeping detailed records of their chickens.

Each of the sanitation flocks averaged 258 hens which made their owners profits at the rate of $1.10 a hen. The non-sanitation flocks averaged 167 hens which paid only 46 cents profit a hen. Each hen in the sanitation flocks averaged 146 eggs during the year, while those in the non-sanitation flocks averaged only 119 eggs. In the sanitation flocks 13.2 per cent of the hens died as against 14.2 per cent in the non-sanitation flocks.

The non-sanitation flocks had a higher investment a hen, the total being $4.69 as against $4.14 in the sanitation flocks. Despite this, the egg receipts from each hen in the sanitation flocks averaged $3, or 76 cents a hen more than in the non-sanitation flocks. It cost 17 cents a dozen to produce eggs in the sanitation flocks as compared to 20 cents in the non-sanitation flocks.

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Two Farm Teams To Risk Titles As Champion Pullers

Two farm teams of horses now holding the state records as champion pullers will risk their titles in nine pulling contests which the College of Agriculture, University of Illinois will stage at the state and county fairs during August and September, it is announced by E.T. Robbins, livestock extension specialist, who is in charge. This is the sixth year that the college has staged the pulling contests for the purpose of studying the factors which influence the pulling ability of draft animals. Pulling power of the teams is measured by means of a dynamometer.

Featuring the contests will be the one at the state fair, August 25 and 26. The remainder of the schedule includes Knoxville, August 11; Taylorville, August 14; Amboy, August 19; Morrison, September 1; Aledo, September 4; Mazon, September 9; Jerseyville, September 11, and St. Joseph, September 16.

Teams entering each of the contests will compete in one of two classes, depending upon their weight. One class is for pairs weighing less than 3,000 pounds and the other for those heavier than 3,000 pounds.

The present state record for light teams is held by a farm team of gray, grade Percherons belonging to Bert McKinley, Mercer county, and weighing 2,820 pounds. At the county fair at Aledo last fall this team lifted 2,750 pounds 27½ feet and 2,775 pounds 24¼ feet. The state record for heavy teams is held by a pair of black, grade Percheron geldings belonging to E. B. Reeves, of Grundy county. At the fair at Mazon last fall this pair, weighing 3,700 pounds, lifted 3,125 pounds 27½ feet.

During the past five years 55 horse and mule pulling contests have been held with a total of 716 teams competing and an estimated attendance of 208,800 people.

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COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

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Regional Outlook Meeting At U. Of I. Opens Next Week

Thirteen central states will be represented at a regional agricultural outlook conference to be held at the College of Agriculture, University of Illinois, September 16, 17 and 18, under auspices of the college and the United States Department of Agriculture for the purpose of bringing current agricultural outlook information closer home to this section of the country. The conference will be open to all members of the research and extension staffs of the College of Agriculture, University of Illinois. In addition 75 research and extension workers in agricultural economics and farm management from the dozen other states are expected to attend. Sessions will be held in Room 103, New Agriculture Building.

States in the conference territory include Illinois, Indiana, Ohio, Michigan, Kentucky, Missouri, Wisconsin, Minnesota, North Dakota, South Dakota, Iowa, Kansas and Nebraska.

Prominent among officials of the Department of Agriculture who will be here for the meeting will be C. B. Smith, chief of the office of cooperative extension work; Eric Englund, assistant chief of the Bureau of Agricultural Economics; O. C. Stine, in charge of the division of statistics and historical research, Bureau of Agricultural Economics, and C. L. Holmes, in charge of the division of farm management and costs, Bureau of Agricultural Economics.

The local committee in charge of the conference arrangements includes R. C. Ross, extension specialist in agricultural economics; R. R. Hudelson, extension specialist in farm organization and management, and L. J. Norton, assistant chief in agricultural economics, all of the College of Agriculture, University of Illinois. H. M. Dixon, senior farm economist in the extension service of the Department of Agriculture, and C. R. Arnold, extension specialist in agricultural economics at the Ohio State University who is temporarily connected with the Department of Agriculture, represent the department.

A special meeting of the hog production advisory committee has been called for the evening of September 15, preceding the opening of the conference program. From 15 to 20 representatives are expected to attend this session which will be in charge of C. L. Harlan, livestock statistician of the Bureau of Agricultural Economics.

The tentative program for the conference follows:

Wednesday, September 16

General Outlook

Session Chairman, H. C. M. Case, Illinois

9:00-10:30 Current Economic Conditions and Their Effect on the Agricultural Outlook

O. C. Stine, B.A.E.

Printed in furtherance of the Agricultural Extension Act approved by Congress May 8, 1914. H. W. Mumford, *Director*.

Wednesday, September 16 (continued)

Discussion

10:30-12:00	Adjustments in Agriculture and the Outlook for Different Farm Commodities in the Central States	C. L. Holmes, B.A.E.
	Discussion--Led by state research men attending conference	
12:00	The Future of Outlook Extension Work	C. B. Smith, U.S.D.A.

1:30 - 5:00 Various sub-committees including men from the states and the B.A.E. will consider in detail the information available and formulate supplementary reports including state or local data, as well as the application of outlook information to local conditions. These committee reports will be presented to the entire conference group for discussion along with the B.A.E. reports on Thursday. All those not assigned to specific committees will choose the one with which they desire to affiliate. The committees include those on hogs, cattle, sheep, dairy, poultry, feed, extension methods in outlook, and outlook research.

Thursday, September 17

Specific Commodity Outlook Session

Session Chairman, Rex E. Willard, North Dakota

Reports with supporting data presented by the B.A.E. representatives. Local information and application reports presented by chairman of each state committee

9:00	Feed Supplies	G. A. Collier, B.A.E. R. E. Willard, N. Dakota
10:00	Poultry	C. L. Holmes, B.A.E. G. W. Miller, Ohio
11:00	Cattle	C. A. Burmeister or C. L. Harlan, B.A.E. S. H. Thompson, Iowa
12:00	Lunch	

Afternoon Session

Session Chairman, C. L. Stewart, Illinois

:30	Sheep	C. A. Burmeister or C. L. Harlan, B.A.E. O. G. Johanningsmeier, Indiana
2:30	Dairy	C. L. Holmes, B.A.E. W. L. Cavert, Minnesota

Thursday, September 17 (continued)

3:30	Hogs	C. L. Harlan, B.A.E.

Evening Session

7:00	Cash Crops (wheat, flax, potatoes)	O. C. Stine, B.A.E.

Friday, September 18

Morning Session

Ways and Means of Outlook Dissemination

Session Chairman, Director H. C. Ramsower, Ohio

9:00-10:00	Demonstration--How a Hog Outlook Meeting is Conducted in Iowa	J. C. Galloway, Iowa
	Discussion including--Additional Features Which Have Been Used Effectively in Hog Outlook Meetings in Other States	
10:00-11:00	Demonstration--General Economic Situation Meeting	M. C. Bond, U.S.D.A.
11:00-12:00	Report of Committee on Extension Method in Outlook	T. S. Thorfinnson, Chairman, South Dakota
	Relation of Research Work to Outlook	Eric Englund, B.A.E.
	Report of Committee on Research Methods in Outlook	L. J. Norton, Illinois Chairman

Afternoon Session

Session Chairman, F. W. Peck, Minnesota

1:30	The Place of Outlook Work in the Entire Extension Program	Dean H. W. Mumford, Illinois
2:00-3:00	How Outlook Information is Used and What Additional Information is Desired:	
	(a) In a Production Program	J. W. Burch, Missouri, Animal Husbandry Specialist
	(b) In a County Program	G. H. Iftner, Farm Adviser, Effingham County, Illinois
	(c) By Farmers	W. F. Schnaidt, South Dakota C. R. Arnold, U.S.D.A.
	Report of Committee on Adaptation of Outlook Information to Individual Farms	R. R. Hudelson, Illinois, Chairman.

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See Signs That Farm Prices Are Nearing Bottom Level

Prices of several Illinois farm products last month continued the downward trend which has carried most of them down to or below the pre-war level, but there are some indications that they are beginning to bottom out, according to L. J. Norton, assistant chief in agricultural economics, College of Agriculture, University of Illinois.

Among 18 representative farm commodities, nine were lower in price in August than they were in July, eight were higher, and one was at the same level. The sharpest declines were in the prices of oats, barley and corn. Later in the month hogs declined. These declines are a part of the readjustment of the prices of corn and related products from a short to a comparatively large crop basis. The nine commodities which held their own or increased in price in August were chickens, eggs, butterfat, wool, butter, beef cattle, veal calves, hay and rye.

Fifteen of the 18 representative commodities were all lower in price during August than the average for the first six months of the year after allowance was made for usual seasonal variations. The three exceptions were butterfat, eggs and chickens. These three were all very low last winter and spring, however. The most marked declines were recorded in the case of cereals and hay. Somewhat more moderate declines were registered by livestock. The improvement in dairy and poultry prices which first became apparent in August reflects a better adjustment in supplies to the reduced demand.

The lower August prices in comparison with those of the first six months of the year reflect, first, the change to a generally lower level of prices which is typically most severely felt in prices of farm commodities and, second, the severe decline in consumer income as the result of the business depression that has accompanied and been largely caused by the general slump in prices. Paralleling the decline in farm prices there has been a decline in employment and payrolls. There are some signs, however, that the severest part of the depression has passed. Farm prices will recover a part of their decline when business activity improves.

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Census Reveals Trend Toward Fewer And Bigger Farms

Fewer and bigger farms seems to be the trend in Illinois, according to an analysis of 1930 census reports by H. C. M. Case, head of the farm organization and management department, College of Agriculture, University of Illinois. With 22,684 less farms reported in the census, the state has 10 per cent fewer than it had in 1920, but the average size has gone up from 134.8 acres to 143.1 acres. Modern equipment has somewhat increased the amount of land the same number of workers can handle, Case explained.

Farms between the sizes of 20 and 100 acres have disappeared faster than others, there being a reduction of 15,577 farms within this size range during the 10 years. This accounted for about two-thirds of the reduction in numbers of farms in the state.

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Some Silos Filled One-Fourth Cheaper Than Are Others

Some Illinois farmers fill their silos as cheaply as 68 cents a ton, while on other farms the bill runs up to $2.68 a ton, according to cost records obtained by the farm organization and management department of the College of Agriculture, University of Illinois.

Six steps are outlined by P. E. Johnston, member of the department, whereby farmers can keep their silo filling costs somewhere near the lower of these two figures. They are: Select the size and type of silo filling machine to fit the size of the job to be done, use only the necessary number of workers, have the proper number of men at each task so that all parts of the work move along together thus avoiding unnecessary delay, have the machinery in good repair before starting to fill, make sure that tractors are adjusted to use fuel and oil efficiently and organize the work to avoid unnecessary delays in starting and in changing from one silo to another.

Costs of filling silos varied widely from farm to farm regardless of whether field harvesters or stationary cutters are used. On farms using the field harvesting machines the cost varied from 68 cents to $2.68 a ton. Where stationary cutters were used the costs varied from 79 cents to $2.32 a ton. The average cost of filling silos with field silage cutters was the same as the average cost of filling with stationary cutters, being about $1.25 a ton.

Higher efficiency in the use of man labor was obtained on farms where the job was large than on farms where only a few acres of corn were cut for silage. On the other hand, as the size of crews increased the hours of man labor for a ton of silage also increased. This indicates, Johnston pointed out, that the larger crews were less efficiently organized and more time was lost because of delays, breakdowns and the fact that the crew was poorly organized so that all parts of work did not move along at the same rate of speed.

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Recent Findings Change Belief On Nitrating Of Apples

One of the most important discoveries in fruit growing was the fact that nitrogen is the only fertilizing element that can be used to advantage in apple orchards. For some years afterwards, however, it was thought that the application should be made only in the spring when the buds were bursting. More recently it has been found that fall applications are just as good as those made the following spring, says W. A. Ruth, chief of pomological physiology at the College of Agriculture, University of Illinois.

The two nitrogen fertilizers, sodium nitrate and ammonium sulfate are almost invariably profitable when applied either in the fall or spring. In the college's experimental apple orchard at Olney these fertilizers are doubling the yield of apple trees at a cost of about 15 cents a tree.

Although no hard and fast date can be set for fertilizing in the fall, because of varying conditions of season, soil and tree, it is customary to put the fertilizers on in September. It is perhaps well to use sodium nitrate one year and ammonium sulfate the next, because the former makes the soil alkaline, while the latter makes it acid. One-fourth as many pounds of sodium nitrate are applied as the tree is old in years. A sixteen-year-old tree, for example, would get four pounds. Three-fourth this many pounds of ammonium sulfate would have the same nitrogen content. Therefore a sixteen-year-old tree would get three pounds of ammonium sulfate. The fertilizers should be distributed evenly over the soil under the branches.

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Peach Borer Is Bad Enough To Make Gassing Necessary

A recent checkup in the peach orchards of southern Illinois reveals that the destructive peach borer is present in about normal numbers, S. C. Chandler, assistant entomologist of the Illinois State Natural History Survey has reported to the College of Agriculture, University of Illinois. Poison gas crystals called paradichlorobenzene, or P.D.B. for short, will therefore have to be brought into action again to protect orchards against damage, he said. Trees one year or older may be treated with very little danger of injury and with a great probability of killing most of the borers if a few simple instructions are followed in applying the chemical, Chandler said.

The rate at which the material should be applied varies with the age of the tree, ½ ounce being put on trees up to three years old, 3/4 ounce on trees three to six years old, 1 ounce on trees from seven to ten years old, and up to 2 ounces on old trees with large bases. Treating should be done not earlier than September 15, better not until October 1 in the extreme southern end of the state, but should be finished by October 15 even there. The chemical should be spread in a ring about an inch wide on the ground around the base of the tree and close to it but should not touch any of the bark. It should then be covered with four or five spadesfull of earth and patted down with the back of the spade to form a watershed.

The presence of the borer is indicated by wax and castings at the base of the tree. Some growers make it a practice to treat all trees one year and then the following year to treat only those trees showing wax. In such cases it is best to wait as late as possible before deciding which trees to treat. It is not safe to let an orchard go two years untreated.

Apple or peach trees should not be treated with paradichlorobenzene as they are nearly always injured or killed.

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Grain Situation Now Favors Fall Pigs As Profit Makers

With plenty of low priced grain on hand, many corn-belt hog producers are wondering if some of it cannot be put into fall pigs as economically as it can into spring pigs, says R. H. Wilcox of the farm organization and management department, College of Agriculture, University of Illinois. This can be done at a profit, he says, as shown by results of pork production studies made by the university among a group of hog men in central Illinois.

For one thing, the studies revealed that it takes somewhat less grain to make fall pork than to make spring pork. The investigation was carried on for three years, and during each of the three years the fall pigs made their gain with less grain than the spring pigs. Spring pigs took 454 pounds of concentrated feed to make 100 pounds gain as compared with 444 pounds of concentrated feed needed for 100 pounds gain in fall pigs.

In addition the fall pigs outstripped the spring ones in the more economical use of feed. The studies further revealed that fall pigs were less expensive in other things besides feed than were the spring pigs. It was shown that fall pigs used less labor and required a smaller overhead in the way of buildings and equipment.

One point in the raising of fall pigs that is very significant under the present price situation is that producing two litters of pigs a year makes it possible to turn out a markedly larger volume of pork a farm with no more expense in the way of permanent improvements and very little added cost of carrying the breeding herd. In other words, the overhead cost of pork production can be materially cut by raising two litters a year.

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Agricultural Outlook Emphasizes Need For Efficiency

By R. C. Ross, Extension Specialist,
Agricultural Economics, College of Agriculture, University of Illinois

The central states outlook conference at the College of Agriculture, University of Illinois, September 16 to 18, brought together 200 representatives of thirteen middle western states and of the United States Department of Agriculture. The federal representatives were from the bureau of agricultural economics, the extension service of the U.S.D.A., and from the federal farm board. State representatives included directors of extension, economic, farm management, and commodity specialists, and county agents.

In speaking on "Current Economic Conditions and Their Effect on the Agricultural Outlook," O. C. Stine, of the bureau of agricultural economics, emphasized the dominance of the general price level as a factor in the present price situation. With the gradual shift from an agricultural to an industrial country, prices of farm products in the United States have tended to rise relative to those of non-agricultural products. In times of price changes prices of agricultural products tend to move in advance of changes in the general level. Depressions are apparently becoming "bigger and better" with the increasing emphasis upon industrial lines, since industry stops while agriculture goes on. Based upon the experience of earlier years, a turning point is due; improvement is already noted in production of shoes, textiles and rubber tires. Some recovery in prices from the current low level is to be expected, even though the general level of prices is downward.

C. L. Holmes, of the bureau of agricultural economics, discussed "Agricultural Adjustments in the Central States," and pointed out the increase in pasture lands in the hillier sections, decrease of wheat in the eastern wheat belt, and a marked increase in dairy production. The present situation has put added emphasis upon efficiency and the more intensive use of the best land, while reducing the amount of labor as much as possible. Many farmers will find it necessary to "dig in," and a "live-at-home" policy has a strong basis, particularly where cash crops or animal products can be produced to advantage.

Commodity reports were prepared for feed supplies, hogs, beef cattle, sheep, poultry, and dairy.

Feed Crops - Supplies of hay and feed grains are smaller than average in the north central states, but are materially in excess of those of last season. Near-average supplies of corn and liberal amounts of wheat nearly offset the smaller crops of oats, barley and hay. Pasture and hay are especially short west of the Mississippi river. Supplies of by-product feeds are smaller than average. Prices of feed grains hay and feedstuffs are at unusually low levels as are also the prices of products into which these feeds may be converted.

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Feed crop production in Illinois during 1931 was distinctly better than that for the previous year and probably will approximate the 10-year average. The southern portion of the state which was short of feed last year has better than normal crops while the northwest area has suffered somewhat by drouth, but will not require the movement of any feed from outside the area.

Hay production is greater than that of 1930 with the area of lowest production in the northwest area.

Pastures as a whole are below average. Rotation pastures as well as permanent pastures have shown marked improvement from the recent rains.

Feed grain situation indicates a production practically equal to the 10-year average and 127 percent of that of 1930, with corn, oats and barley near average.

The wheat crop was the heaviest yield on record and with the low farm price will become an even greater factor in feed grain supplies. A recent special survey indicated that of the 1930 crop of wheat 19.4 percent, or approximately 6,800,000 bushels, were fed. This survey also indicated that approximately 31 percent of the 1931 crop would be fed, thus utilizing 14,225,000 bushels.

Hogs - In the northwestern states drouth has restricted corn production. In the remainder of the corn belt supplies of new corn will apparently furnish a plentiful supply of feed for hog production. It seems probable that a larger than normal proportion of this feed supply will be used in hog production. The hog situation warrants caution at this time, in view of continued weakness in the domestic and foreign demand situation, an expanding hog production, and the presence in the hog situation of unusual factors, such as severe pressure of farm credits, abnormally low grain prices and consequent drastic changes from past feeding practices. While present feed-hog ratios are stimulating hog production, the possibility of a narrowing of these ratios under present demand conditions should be called to the attention of hog producers. After careful consideration of other alternatives for marketing of grain, the farmer who gives particular attention to production costs may still find hogs profitable under narrower feed-hog ratios.

Beef Cattle - The favorable beef cattle-feed ratio existing appears to favor the conversion of the usual amount of feed into beef where the farmer has cattle of his own raising and the requisite amount of feed. Farmers who buy feeder cattle to consume feed on hand should purchase with caution to avoid undue speculative risks. Those with feed who dislike to assume all of the speculative risks involved in purchase of feeder cattle may be able to make contracts with others who own feeders providing for division of losses and gains. Farmers who desire to raise their own calves for finishing in creep at eight or ten months or as baby beef should find the present time opportune for purchase of cows because the latter are now relatively cheap.

Sheep - There seem to be no indications that sheep men in the central states will sell off their sheep with the possible exception of a few areas where drouth has caused a shortage of feed. Sheep from these drouth-stricken areas will probably move to areas where feed is available.

In this section of the country where sheep are part of a general farm business, low prices of other products leave no great incentive for farmers to quit raising sheep. With the low prices of ewes there is some evidence that new flocks are being started. However, the percentage of new flocks started will be relatively small. There will probably be an increase in the number of ewes bred this fall compared to the number bred in 1930. This is in contrast to western areas where a marked liquidation is taking place.

Poultry and Eggs - In the central states 20.5 per cent fewer chicks were hatched this year than in 1930. However, chick mortality appears to have been less. As a result available information indicates that there will be in this section approximately 14 per cent fewer hens and pullets in laying flocks on October 1, 1931 than last year. Reports indicate that pullet flocks will come into production about two weeks later than a year ago.

The ratio between egg and poultry prices and feed is favorable at the present time. Low prices of home-grown feeds along with financial pressure may tend to discourage purchases of protein supplements so that, although laying flocks may be fed more, they may not be better fed. Low feed costs, together with the necessity for a cash income, and the fact that many farmers are expecting favorable egg and poultry prices in relation to feed costs, may tend to cause a larger proportion of hens and pullets to be retained than usual.

Dairy - The indications are that there will be no more dairy products produced in the central states for the period October 1, 1931, to May 1, 1932, than in the year previous. The important producing sections in Minnesota and Wisconsin are decidedly short of winter feed as compared to a year previous, while in the eastern corn-belt states feed conditions are more favorable than in the previous year.

The indications are that up to September 1, the calves were doing more of the milking in dual-purpose herds than in the previous year, but there is not likely to be any material increase in supplies of butter from dual-purpose herds during the winter, as a large proportion of such herds freshen in the spring.

On September 1, 1931, stocks of butter in storage were 27 per cent less than one year ago and 32 per cent less than the average of the previous five years. Stocks of all types of cheese were 19.5 per cent less than one year ago and 14.3 per cent less than the five-year average.

On August 1, 1931, stocks of condensed and evaporated milk were practically the same as one year ago.

The decrease in storage stocks is due to the increase in consumption of dairy products, particularly butter, and the curtailment of production in important states as a result of low feed supplies and hot dry weather in recent months.

Farmers who have ample feed supplies are likely to find that the dairy cow offers a relatively good market for feed, and liberal feeding of grain may be expected. The milk cow population will probable show some further increase during 1932 because of the large number of dairy heifers now on farms. Fewer heifer calves have been raised in 1931 than for several previous years. There is an opportunity for many farmers to utilize advantageously a heifer or some veal calves for home consumption in order to avoid paying retail prices for meat.

Demand

The demand for agricultural products continues weak as evidenced by the current price level. Low prices, however, tend to stimulate consumption; this is evident in the stronger tone for dairy products. An increase in consumers' incomes through an increase of business activity appears necessary to any marked improvement in either the domestic or foreign demand. Adjustments are being made in many places which should pave the way for some improvement in conditions.

The consideration of the value of outlook work, its scope, research needed as a background and methods of disseminating outlook information occupied the final day of the program.

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The Extension Messenger

COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

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New Bulletin Reports Range Of Corn Harvesting Costs

Costs of harvesting corn, Illinois' most important crop, range all the way from $2.98 an acre with two-row mechanical huskers to $10.06 an acre when the crop is cut up for silage with a field harvester, according to results of studies just announced by the experiment station of the College of Agriculture, University of Illinois.

The findings are reported in a bulletin, "Harvesting the Corn Crop in Illinois--An Economic Study of Methods and Relative Costs." The authors, who were in charge of the investigations, are P. E. Johnston, of the farm organization and management department, and K. H. Myers, of the federal bureau of agricultural economics, which cooperated in the studies. The costs were calculated on the basis of 1928 and 1929 prices.

Between the two extremes of $2.98 an acre and $10.06 an acre, the harvesting costs were found to be $3.55 an acre for husking with a one-row mechanical husker, $9.85 an acre, when the crop was cut up for silage with a stationary cutter and $5.61 an acre when the crop was harvested by cutting and shocking.

About 89 per cent of the corn crop of the state is harvested from the standing stalks, either with mechanical huskers or by hand, it was revealed in the studies. The reported costs for mechanical huskers included all cash costs plus the value of labor, equipment and power furnished by the farm. The hand husking cost was figured at the rate of 5½ cents a bushel plus $1 a day for room and board of each husker.

On the basis of a 50-bushel yield, the cost was 7.1 cents a bushel and 6 cents a bushel, respectively, with one- and two-row machines and 10½ cents a bushel for hand husking.

Advantages of mechanical huskers as summarized by the investigators were lower costs than with hand husking, less time required for husking so that it could be finished earlier in the season, less dependence on hired labor and easier work.

Points in favor of hand husking were that it can be done by the labor regularly employed on the farm, thus saving cash expense; no capital is invested in equipment; less corn is left in the field and the stalks are not broken down so badly.

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W I L L Broadcasting Farm and Home Feature At Noon

More Illinois listeners are expected to be able to hear the farm and home features from the University of Illinois radio station W I L L as a result of change whereby these numbers are now broadcast at noon instead of in the evening. Talks in agriculture and home economics by members of the College of Agriculture staff are now put on the air at 12 o'clock noon every week day except Friday. The Friday period is given over to Professor A. W. Nolan for a series on rural life. The mid-day broadcast of the station starts at 11 o'clock with a classroom feature which runs until 11:50 a. m. There is then ten minutes of studio music followed by the farm or home feature for ten minutes and then a concluding period of five minutes of music. The station broadcasts on a wave length of 890 kilocycles.

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Slump In Earnings Puts Adjustments Up To Elevators

Earnings of Illinois farmers' elevators have dropped off sharply during the past two years, creating a situation that calls for certain adjustments, according to a report, "Financial Results of the Operation of Illinois Farmers' Elevators in 1929 and 1930," which has just been issued by the experiment station of the College of Agriculture, University of Illinois.

The principal reason for the drop was that average earnings from handling grain were lower, owing in part to a lower volume in bushels but to a large extent to lower average margins earned a bushel, the report explains. It was prepared by L. J. Norton, of the division of agricultural economics.

"Lower prices for grain in the past year and a half and the strong probability of prices during the next few years averaging lower than they did in the period 1921-29 create a situation that calls for certain adjustments. Possible adjustments might be made along three lines: (1) avoidance of speculative losses which should increase the average price that can be paid without reducing earnings on capital; (2) reduction in unit costs through spreading overhead costs over larger volume; and (3) reduction in specific items of expense."

Earnings on each $100 of capital stock averaged $3.79 in 1930-31, $9.17 in 1929-30, $15.89 in 1928-29 and $11.16 in 1927-28. Earnings on each $100 of net worth averaged $2.49 in 1930-31, $6.45 in 1929-30, $11.59 in 1928-29 and $9.50 in 1927-28.

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Highest-Yielding Wheats In Record Year Were Turkey

With Illinois' wheat crop making a record yield this season, wheats of the Turkey type were outstandingly the best yielders in variety comparisons made at Urbana and DeKalb by the College of Agriculture, University of Illinois, it is reported by George H. Dungan, associate chief in crop production. Standard soft wheats were at the top in variety tests at Alhambra in southern Illinois.

The best six varieties at Urbana were either selections from Turkey or hybrids in which Turkey was one of the parents. The old standard Turkey variety itself upon which no special selection has been practiced ranked fifteenth. The leading five varieties at Urbana were Illinois Selection 131, Wisconsin Pedigree 2, Ioturk, Tenmarq and Purkof.

The five leading varieties at DeKalb were Minturki, Wisconsin Pedigree 2, Minnesota Reliable, Iobred and Michikof. All of these except Iobred were developed from Turkey. The best varieties at Alhambra included Fulcaster, Illinois Progency 2, Michigan Amber, Red Sea, Fulhio and May ranking in the order named.

-M-

More Farm-Frozen Delicacies Would Help Milk Market

With the present low prices for whole milk and butterfat, farmers can bolster the market by consuming more of their own dairy products in the form of frozen delicacies, according to a new circular "Making Frozen Delicacies at Home," which has just been issued by the College of Agriculture, University of Illinois. Although lots of milk and cream are used by most farm families for the table, in cooking and in the making of butter and cheese, only minor use is made of these products for frozen delicacies, it is pointed out by P. H. Tracy, associate chief of Dairy Manufactures and author of the circular.

-M-

Handling Skill Will Make Or Break Livestock Farmer

Livestock can make or break the farmer depending upon how efficiently it is handled, according to records collected by the farm organization and management department of the College of Agriculture, University of Illinois for 300 central Illinois farms all located on brown silt loam soil. Some were grain farms and others were livestock farms. However, the most successful as well as the least successful ones were in the livestock group, according to P. E. Johnston, a member of the department. One year there were two farms in the livestock group with earnings higher than any of the grain farms and three with earnings lower than any of the grain farms.

"The man who is successful with livestock can increase his earnings by increasing the amount of livestock. The man who consistently gets a low return for feed fed to livestock can improve his earnings either by increasing his livestock efficiency or by cutting down the amount of livestock kept. However, accurate records which will indicate the operator's efficiency with livestock over a period of years are essential before any recommendations are made concerning changes in the amount of livestock.

"In 1925 and 1926 all of the livestock farms as an average were more profitable than the average of all grain farms, but in 1927, 1928, 1929 and 1930 grain farms were more profitable than the livestock farms. For the six-year period 1925-1930 the rate earned on the capital invested was slightly higher for the average of all grain farms than for the livestock farms. This indicates why less livestock is being produced an acre in east central Illinois than in other sections where a larger percentage of the land must be used for permanent pasture. In regions where the land is more rolling, few grain farms are found.

"Crop yields were slightly higher on the livestock farms than on the grain farms. For the six-year period the average corn yield was 47.1 bushels an acre for the grain farms, 48.6 for the mixed and 48.7 for the livestock farms. Yields have decreased rapidly during the past 10 years on grain farms where no legumes were grown."

-M-

Profitable Crops Await Liming Of Most Illinois Soils

Most Illinois land is too acid, or sour, to grow clovers successfully and consequently must be limed before any profitable soil building can be done, according to a new circular "Limestone the Key to Soil Building and Higher Crop Yields", which has just been released by the College of Agriculture, University of Illinois.

Many Illinois farmers who are convinced that farming acid land is poor business have used more than five million tons of limestone during the past ten years. These farmers realize, Linsley pointed out, that in a period of low prices it is more important than ever to produce good crop yields if taxes, interest, labor costs and other expenses are to be met and a living wage obtained in return for labor and management. In many cases it is often a question of liming the land and growing more profitable yields or quitting the farm. In all sections of the state worn, acid soils have been transformed into fertile, high producing land by the limestone-clover combination.

The experiences of a half dozen farmers and results from several soil experiment fields are reported in the circular to show that limestone pays. Other subjects covered in the new circular are lower unit costs through higher yields, common reasons for failure to lime soils, fair adjustments between landlords and tenants in applying limestone, why soils become acid, what soils need limestone, how to test for limestone needs, the best time to apply limestone and time- and labor-saving methods of unloading and spreading limestone.

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Timely Notes for Farm Advisers and others from the Agricultural College,
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Only One Chance Remaining To Cope With Corn Prices

Only one chance now remains for farmers who sell corn to cope with the present low price of corn and that chance is in shaving harvesting costs, says P. E. Johnston, of the farm organization and management department, College of Agriculture, University of Illinois. With labor as cheap as it is, only the most efficient mechanical husking can compete with hand husking rates, he said.

Farmers with high yields can best afford to use mechanical huskers, according to recent study made by the department on costs of harvesting corn on many farms. With one-row mechanical huskers costs were 3.1 cents a bushel more when the yield averaged 30 bushels an acre than they were when the yield averaged 50 bushels. With this same range in yields the variation in costs was 2.1 cents a bushel in favor of the higher yield where two-row machines were used.

The average cost with one-row machines husking 160 to 199 acres was 1.9 cents a bushel less than it was with machines husking 40 to 79 acres. For this reason farmers who cooperate in the ownership of husking machines stand a good chance of keeping costs at a lower level because of the larger use made of the machine each year. The more efficient use of huskers on larger acreages is the result of better organized crews, better adjustment on machines and the incentive to cover the acreage before bad weather stops the use of the husker. Interest on investment and shelter are charges which become less for each acre as a larger acreage is covered.

Where less than one and one-half hours of man labor were used an acre with one-row huskers the average cost a bushel was 7.6 cents. On those farms where more than three and a half hours of man labor were used an acre the cost was more than 9 cents a bushel. In the case of two-row huskers the low labor usage kept the average cost down to 5.9 cents a bushel, while on those farms where more than three and a half hours of man labor were used an acre the average cost was 7.8 cents a bushel.

Where two-plow tractors would handle the job it was found that less gas and oil were used than where three-plow tractors were used. The study showed that it is worth the farmer's time to take all necessary precautions to supply plenty of lubrication in order to keep down the repair bill, Johnston pointed out.

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Poor Economy To Waste Even Cheap Feed, Nevens Says

Feed will never be so cheap this winter that it will not be expensive to waste it, says Dr. W. B. Nevens associate chief in dairy cattle feeding at the College of Agriculture, University of Illinois. Experiments which he conducted for five years showed that waste of silage resulting from spoilage at the surface may be prevented by covering the silage with one layer of single-ply roofing paper and some kind of an inert insulating material. The paper may be covered with sawdust, ground limestone, dried earth or any other material which will give a weight of 10 to 15 pounds a square foot. If the farmer has only one silo from which he is going to start feeding right away, it will not be necessary to put on the covering.

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Garden To Meet 1932 Needs Must Be Started This Fall

Now, and not next spring, is the time to get ready for gardens if they are to do the heavy duty expected of them in these times, says B. L. Weaver, of the horticultural department, College of Agriculture, University of Illinois.

"One thing often neglected by gardeners is the seed supply. The surplus from the past season should be looked over and all questionable lots discarded. Any seed which germinated poorly should be thrown away. Beans, corn, onions, parsnips, peas and salsify often germinate weak when held over. It is a wise plan to put the year of purchase on the package so that the age of the seed will be known.

"Varieties that have not given satisfactory results might be planted again by mistake if the seed is not discarded. A planting record is helpful in this respect and may include the variety name, time and details of planting, date of harvest, yield and notations for changes in procedure another year.

"Out-of-door preparations should consist of a thorough clean-up of the garden. Crop residues should be disced in when possible to add to the humus content of the soil. If manure is available a liberal application should be made and plowed under. Advantages of fall plowing are: (1) heavy soils are improved by frost action; (2) decay of plant material is hastened; (3) many insects are killed; (4) less work is required in the spring; and (5) the garden area can be prepared and planted earlier than would be possible otherwise.

"Fall plowing may be inadvisable on sandy soils or where the garden is on a slope subject to washing. Danger of erosion by wind or washing also may require that no crop residues be taken off until spring."

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Using Poison Bait Now Will Prevent Damage By Gopher

Costly damage by pocket gophers to alfalfa and other legume crops in Illinois can be easily checked at this time of the year by putting poison bait in the underground runways of the animals, says G. C. Oderkirk, rodent specialist of the federal biological survey, cooperating in this state with the Illinois State Natural History Survey and the College of Agriculture, University of Illinois. A second dose of bait should be used early in the spring.

"A vegetable bait usually is taken better than a grain one, although both are effective. Sweet potatoes are preferred but carrots or Irish potatoes can be prepared by cutting them into strips about one-half inch thick and one and one-half or two inches long. It is important to cut the bait to this size. It is then washed, the water drained off and one-eighth ounce of powdered strychnine and one-eighth ounce of baking soda sifted over three quarts of the cut bait. The bait should be stirred thoroughly to coat it with the poison and is then ready for use.

"Pocket gopher runways usually are 14 inches or so below ground. They can be located by probing in the soil near the gopher mounds with a broomstick or other round stick about an inch in diameter. An opening is made in the runway and either a tablespoonful of strychnine-coated grain or four or five pieces of a vegetable bait dropped into the opening. It should be closed after the bait has been placed. A few baitings in the vicinity of fresh mounds usually will destroy all the pocket gophers in a system."

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Crown Champion In Newest Sport Of Illinois Farmers

E. E. Bane, a McLean county farmer, is the first state champion in the newest sport of Illinois farmers--plowing matches for big teams only, according to a report by E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. Driving a 12-horse team to a four-bottom tractor plow Bane scored 93.4 points out of a possible 100.

This was the highest score made by any of the 30 contestants in three sectional plowing matches staged by the extension service of the agricultural college to show farmers the possibilities of big teams as economical and useful power units. Demonstrations with big-team hitches have been staged for several years by the college, but this was the first season that the plowing matches were added as a new feature. A total of 3,300 people, mostly farmers, attended the three contests.

Ed. Stout, Piatt county, and Summers & Archer, Sangamon county, were runners-up to the state champion, these two contestants scoring highest in their respective sectional contests. Stout drove an eight-horse team and Summers & Archer an eight-mule outfit.

Bane, the champion, farms his 400-acre place with 12 horses. In plowing he works them all day in one team and covers about 12 acres a day. When he plants corn, ten of the horses pull a tandem disk with harrow attached and the other two horses take the planter. In the plowing match his daughter drove the team one round and did just as well as he did, demonstrating the satisfactory control which the driver has over such an outfit, Robbins reported.

Teams in the contests included outfits of five, six, eight and twelve horses. Each team was driven with only two lines on the leaders. Each of the horses behind the leaders was controlled by a tie chain and buck rope. The contestants laid out straight lands, made neat back furrows and maintained an even and smooth job of plowing. Success of the drivers made it easy for the 3,300 spectators to understand why big team operations have increased so fast in Illinois during the past several years, Robbins said.

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60-Million Dollars Industry Uniting Scattered Forces

Mobilization of some of the leading forces that are working to put Illinois' 60-million-dollar poultry industry on an even higher plane marked the recent two-day school for hatchery operators at the College of Agriculture, University of Illinois.

Chief among the mobilization moves was the organization of the Illinois Standard Accredited Hatcheries Association with Lubert A. Schafer, Springfield, as president. A total of 210 hatcheries accredited by the Illinois State Department of Agriculture will be banded together in the new group. Herbert Helm, Metropolis, was made vice-president and Mrs. Ray Curry, Clayton, secretary.

A further move toward getting the state's poultry interests together was taken when President Grant B. Burman, of the Illinois Baby Chick Association, appointed a committee of five to work with other interested agencies toward the formation of an Illinois State Poultry Improvement Association. The committee includes A. C. Koch, Breese; J. Turner Mills, McNabb; D. K. Roth, Gibson City; Lubert A. Schafer, Springfield, and Herbert Helm, Metropolis.

Eighty hatcherymen from all parts of the state attended the school. It was the second one that has been held by the College of Agriculture, University of Illinois to give hatchery operators up-to-date pointers on breeding, hatchery flock management, costs, marketing, advertising and sales and disease and parasite control.

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Director Mumford's Report Relates Many New Results

Featuring lower production costs, more efficient methods and higher quality products, the 300-page annual report of Director H. W. Mumford, of the experiment station, College of Agriculture, University of Illinois, has again been released in record time to farmers, homemakers and other interested persons.

This is the sixth straight year in which Illinois has led all other states in getting the results of its research work into the hands of those for whom it is designed. Results of 265 projects covering all phases of farming and homemaking are reported in the new volume under the title, "A Year's Progress in Solving Farm problems of Illinois." The year covered by the report ended June 30.

Because of unusual conditions which prevailed in 1930, few projects of the station attracted more attention than the one on agricultural adjustments, it is pointed out in the report. The need for facts upon which farmers can intelligently base adjustments in their business is recognized by the station as one of the present-day challenges to experiment station, Director Mumford says.

More was learned about Illinois soils through the mapping of an additional 1,774 square miles in the state soil survey and soil reports are now available for 49 counties, it is reported in the soils and crops section of the new volume. Looking to the time when industrial conditions may require new kinds of crops and new products, the station also started studies on the adaptability of certain new agricultural crops for Illinois. "With the growing surplus of such crops as corn, oats and wheat it would mean much to the state of Illinois if new crops with new uses could be found, Director Mumford points out.

Clues for relief of the wheat situation came out of animal husbandry studies which revealed that wheat was worth more than $1 a bushel when fed in properly balanced rations to fattening cattle. In another of the many projects of this department, a new and promising quantitative method was developed for use in vitamin research.

A landmark in the field of dairy cattle breeding is reported to have been set up in experiments to find the principles underlying the inheritance of such characters as milk yield and percentage fat content. Two improved forms of expressing age-correction factors in milk yields of cows also were devised and a machine invented for computing the lactation curves of cows, as a result of further work in comparing the production records of dairy animals.

Earnings on Illinois farms in 1930 were reported the lowest since 1921, but the usual differences were discovered between net earnings of the most successful farms and the least successful ones.

Early death of many apple trees in Illinois could be avoided and the profitableness of orchards prolonged if growers used improved methods of pruning as worked out in further studies of this problem, according to the report. Further clues to the control of bacterial spot, the only peach disease which can not be controlled by proper spraying, also were worked out.

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Few Things Will Pay Like Extra Care With Seed Corn

Few things that Illinois farmers can do without paying out cash will bring them more profit in 1932 than care in the selection, storage and handling of seed corn this fall and winter, according to J. C. Hackleman, crops extension specialist of the College of Agriculture, University of Illinois. The average increase obtained by farmers who have field-selected and cared for their seed corn has been more than six bushels an acre, he reported.

"Selecting seed ears from standing stalks is of first importance, because experiments have shown that yields may be cut as much as five bushels an acre by using ears from down stalks. Ears also should be selected from sound shanks which are still holding the ear at a good angle, indicating that the shank has not been broken and the food supply of the ear cut off. Broken shanks always indicate disease or frost injury, both of which result in inferior seed.

"Only those ears which are well covered by the husk should be selected for seed, because experiments by the college have shown that there is four times as much disease in ears with exposed tips as there is in ears which have their tips well covered.

"In many fields the effects of light frosts or low temperatures are showing up now in the form of broken stalks or stalks that are very weak and can be crushed or pushed over. It is important to eliminate these frost susceptible strains as soon as possible. Therefore stalks which are leaning or down, those with broken shanks and those with bleached or injured spots where rots are likely to get started should be passed by in selecting seed ears.

"Proper storage of the seed ears is just as important as the field selection itself. Requisites for good storage are quick drying and protection from rain, direct sunlight and freezing temperatures."

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Bush Fruits Aid "Live At Home" Program For Farmers

Any "live at home" program which Illinois farmers follow during the next few years may well include plenty of such fruits as current and gooseberries, says A. S. Colby, chief in small fruit culture at the College of Agriculture, University of Illinois. October is often a good month to start a new lot of cuttings of these two fruits, he recommended. If the cuttings are set out in October instead of being stored until they can be set in the spring, they will make an early start and with one growing season make larger plants worth more for early fruiting than ordinary one-year old stock.

"When cutting wood is being selected, only shoots of the present season's growth should be taken. Several healthy, well matured, one year old growths should be removed from different parts of the bush. Cuttings should be about six to ten inches long, the longer the better.

"The site for planting should be well drained with soil of moderate fertility which can be easily worked. The cuttings should be planted in furrows wide enough apart for cultivation and deep enough to accommodate the cuttings, leaving not more than two buds exposed. If the cuttings are long, they may be laid in the furrow in a slanting manner.

"Each cutting needs from four to twelve inches in the nursery row, depending upon the size of the variety as a mature plant. The furrow should be carefully filled with soil of good texture and a dust mulch provided to encourage the growth of roots at once. With the approach of freezing weather in November, shallow ridge of soil should be thrown up over the cuttings with a plow or cultivator, or a mulch of strawy manure three inches deep should be applied. In any event the mulch should be removed early in the spring."

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Drop In Corn And Hogs Is Feature Of Price Changes

Outstanding changes in Illinois farm prices during September were the sharp decline in prices of corn and hogs, further weakness in prices of eggs in view of the season of the year and strength in prices of dairy products, according to an analysis by L. J. Norton, assistant chief in agricultural economics at the College of Agriculture, University of Illinois. Out of a list of 17 major farm products, the Illinois farm prices of five were higher, ten were lower and two were the same about September 15 as compared to a month earlier, after allowing for the usual seasonal valuation.

Lower prices for corn reflect the shift to a new crop basis and the general lack of confidence in future values, Norton believes. Following a change from a very short corn crop like the one of 1930 to even an average crop like that of 1931, there is always a downward readjustment. Although considerably larger than the one of last year the 1931 corn crop is only about the average of the five years 1925-29 and is considerably smaller than the average of the past ten years. Going back to 1918 there have been only four years when the crop was smaller than it is this year, and in two of these the difference was slight.

An important factor influencing the price of corn is the number of hogs in the county, because hogs are the largest single outlet for corn. The number of hogs marketed in the year ending September 30 was the lowest for four years. Some expansion in hog production will be required to establish the balance between corn and hogs which is needed to have relatively favorable corn prices. This expansion is now underway, and the relatively favorable corn-hog ratio will stimulate it further.

If this cycle runs its usual course, hog production will expand to the point where the increased supply of hogs and increased demand for corn will make corn prices relatively higher than hog prices and establish an unfavorable corn-hog ratio. At present, however, the number of hogs is low in relation to corn supplies and this tends to weaken corn prices.

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Illinois Wheats Make Flour That Meets A Dual Need

No longer need the housewife who does her own baking keep two kinds of flour, for flours that meet all the various needs of the average home can be made from soft wheats grown in Illinois. This has been established in milling and baking tests by the department of home economics, College of Agriculture, University of Illinois, it is reported by Miss Sybil Woodruff, a member of the department. Heretofore housewives have held to the popular belief that bread requires a very strong gluten and cake a very soft, weak one.

Out of five varieties of Illinois wheat that were milled and studied in the investigations, Ilred, was found to be more like a hard wheat. However, flours of the other four, Fulcaster, Fulhio, Fultz and Michigan Amber, were found to contain about 8 to 9 per cent protein and therefore were intermediate between a good hard-wheat flour containing 12 per cent and a very soft pastry flour of 7.5 per cent gluten.

After baking and scoring many loaves of bread, the investigators found that these soft-wheat flours would make as good bread as hard wheat, provided the dough was handled more moist and given fewer and less vigorous kneadings than the hard-wheat flour. Also the baking qualities of the soft-wheat flours were found to be improved by using milk for the dough.

Fulcaster and Fulhio flours of either "patent" or "all middlings" grades scored as high in biscuits as any flour used. These two flours made excellent butter and angel cakes which equalled in quality the products made with a much advertised brand of so-called cake flour.

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Soybeans Not To Blame For All "Soft" Pork Troubles

One of the corn belt's leading crops, soybeans, was at least partially cleared of blame in the present packer-farmer controversy over "soft" pork when Professor Sleeter Bull, associate chief of the meats division at the College of Agriculture, University of Illinois, explained the merits and limitations of the crop before the annual convention of the Institute of American Meat Packers in New York City.

Not all of the recent marked increase in "soft" hogs, about which packers have been protesting, can be laid to farmers feeding soybeans, he reported. The marketing of late maturing hogs at light, or under-finished weights, in order to supply the modern-day demand for small, lean cuts accounts for a considerable, but unknown, number of "soft" pork carcasses, he added.

"Soybean oil meal produces pork of top grade and both soybeans and soybean oil meal produced beef and lamb of excellent quality. This has been established in extensive experiments which we have made for a number of years at the experiment station of the College of Agriculture, University of Illinois.

"No way was found, however, whereby whole soybeans could be fed to produce 'hard' pork. Nevertheless, if all the harvested soybeans in Illinois, the leading producing state, were fed in balanced rations for fattening hogs, they would make only 170,000 soft hogs, or about 4 per cent of the total hog production of the state. Furthermore, not all of the harvested beans are used for fattening hogs. A considerable amount of them is used for feeding brood sows and other livestock.

"There are other reasons why there is nothing alarming about the fact that whole soybeans produce 'soft' pork. In the first place, the demand for soybean oil meal in industry will probably furnish a more profitable outlet for whole soybeans than will hog feeding. Then too, the quicker, more economical gains obtained with soybean oil meal or tankage will lead to whole soybeans being utilized for other purposes than hog feeding.

"Another approach to the solution of the 'soft' pork problem lies in the development of a type of hog which furnishes small, firm cuts and puts his fat upon his belly instead of upon his back, where it was wanted in the days when lard was more in demand. The College of Agriculture, University of Illinois is beginning experiments to find or develop a hog of this type."

The "soft" pork problem had its origin in the south where hogs are fed largely on peanuts and mast, feeds which produce soft, oily pork unattractive and undesirable to the consumer. Unfortunately for the packer, it is impossible to distinguish between a "soft" hog and a "hard" one until the carcasses have cooled out in the refrigerator. Packers therefore assume that all hogs coming from the south are "soft" and buy them on that basis, to the loss of the southern hog raiser. During the past two years there has been a marked increase in the "soft" hogs on northern markets. Soybeans came under suspicion because of the extensive increase in the acreage of them.

-M-

Promising Results Reward Quest For New State Crops

New crops with new uses, which would mean much to Illinois in the face of growing surpluses of old crops like corn, oats and wheat, are being searched for with promising success in one of the latest investigations launched by the experiment station of the College of Agriculture, University of Illinois.

The purpose is to find and study unusual crops under Illinois conditions, looking to the time when industrial conditions may require new kinds of crops and new products. The work is in charge of Dr. W. L. Burlison, head of the agronomy department, and other members of that staff.

One of the promising new crops being studied is pyrethrum, the flowers and stems of which supply the killing agent for thousands of insecticides. Until a few years ago it was thought that only the partly opened flowers were valuable as a source of the killing agent. For this reason the growing of the crop has been confined largely to the Orient where cheap hand labor is available for going through the fields and picking off only the partly opened flowers. More recently it has been discovered that the fully opened flowers also are valuable. This opened the possibility of developing mechanical pickers for the flowers and made the crop a promising one for the agricultural regions of the United States.

Pyrethrum, which is a species of crysanthemum, is now grown principally in Persia, and one large Illinois insecticide manufacturing company now sends two buyers there annually. More than 2,200 trade-marked insecticides now contain the pyrethrum powder, and as far back as several years ago a million and a half pounds of the refined powder were imported from Japan alone. The material is quite expensive and the use of it is said to be expanding.

Another of the new crops which has shown promise in the studies is artichokes, which are used in making sugar for diabetics, for human food, for silage and for hog feed. Yields as high as 285 bushels an acre were produced on run-down soil which probably would not yield more than 40 bushels of corn in a good year.

Safflower and hemp are being investigated as sources of oil. Use of soybeans as a source of oil for paints also is being studied.

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Builds Farm Into An "Oasis" With Cattle And Clover

A neighbor says that J. H. Wiyatt's farm in Jasper county resembles an oasis in a desert, so successful has he been with a combination of Hereford cattle and soil building crops.

In the opinion of E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois, Wiyatt's plan of having cattle graze the soil building crops and eat the hay which they produce represents a practical way of putting the much needed soil building program in southern Illinois upon a sound economical basis. Under this plan the cattle bring a cash return from the soil building crops and still the succeeding grain crops are benefited. Wiyatt claims this beats plowing under clover merely for soil improvement.

He has covered most of his land with limestone, in spite of the fact that it took three or four tons to the acre to sweeten the soil so that clover of any kind would grow luxuriantly. He has found that the best way to use soil building crops is to have the cattle eat them, either as pasture or hay. He likes a mixture of timothy and red clover for pasture, because this combination has a long grazing season. Sweet clover also does well in its place.

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Waning Pastures Leave Cow Profits Up To Grain Feeds

Fall pastures will soon be a thing of the past, and dairymen therefore will have to give more thought to grain rations if Illinois' one million dairy cows are to keep their production up to a paying level, says C. S. Rhode, dairy extension specialist of the College of Agriculture, University of Illinois. Dairymen who watch the fundamentals in feeding save heavy losses, he added.

Home grown grains always furnish the cheapest base for a ration and should be used as extensively as possible. However, they are relatively low in protein and must have added to them some high protein concentrate such as soybeans, soybean oil meal, cottonseed meal, linseed oil meal, gluten feed or gluten meal.

The proportions of protein supplement depend entirely upon the type of roughage used. When plenty of alfalfa, soybeans, cowpea or clover hay is the only roughage fed, the grain mixture need contain only 12 to 15 per cent total protein. The smaller amount is used when the hay is of high quality. When legume hay is fed with such feeds as silage and fodder or when mixed hay alone is fed, the protein content of the ration should be increased to 15 to 18 per cent. The amount is varied according to the quality and amount of hay fed. If no legume hay at all is used, even more protein is required. The proportion in this case should be 18 to 22 per cent.

Grain mixtures containing the same amount of protein may vary widely in cost, depending upon the price of the supplement which is used. It, therefore, is to the dairyman's advantage to balance his rations with the cheapest supplement available. At $12 a ton soybeans supply a pound of protein for 1.6 cents; cottonseed meal at $22 a ton supplies a pound of protein for 2.6 cents; soybean oil meal at $25 a ton supplies a pound of protein at 3.1 cents; linseed oil meal at $28 a ton supplies a pound of protein for 4.1 cents; gluten feed at $18 a ton supplies protein for 3.8 cents a pound and bran at $14 a ton supplies protein for 4.7 cents a pound.

When cottonseed meal costs $1 a hundred pounds, soybeans are worth 50 cents a bushel for supplying protein. With the price of linseed oil meal at $1.20 a hundred pounds, soybeans are worth 74 cents a bushel for supplying protein. When soybean oil meal is selling at $1 a hundred pounds, soybeans are worth 55 cents a bushel for supplying protein. These comparisions are made on the basis of protein, with allowance being made for the value of nutrients other than proteins in terms of their value in corn. Corn is figured at 30 cents a bushel. The cost of grinding soybeans is figured at 10 cents a hundred pounds.

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Seasoned Wood As Good As Coal For Making Winter Heat

Indications are that there will be lots of wood burned this winter, and if people who are planning to get their heat from wood will cut it properly and season it, they can have fuel as good as any coal they can get, says L. E. Sawyer, forestry extension specialist of the College of Agriculture, University of Illinois and the Illinois State Natural History Survey.

Wood which is to be used for heating purposes should be cut and thoroughly dried before it is burned. Otherwise a portion of the heat will be required to evaporate the water, and poorer results will be obtained from its use. Those who rely on wood only in cases of emergency usually burn green or only partially seasoned wood which gives them very poor results.

If properly cared for there are very few areas of farm woods in Illinois that will not produce a minimum of one cord of wood to the acre each year. Many of them will produce well over two cords. Just what this wood is worth for fuel purposes depends entirely upon the price of coal in the vicinity and the species which are growing on the area.

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70 Farm Families Report A Living Of $2,489 A Year

First definite facts as to the standards of living on Illinois farms and in small towns has come out of a study by the experiment station of the College of Agriculture, University of Illinois showing that the value of the living of 70 selected Illinois farm families averaged $2,489 a year during the period 1929-1930. The average expenditure of 18 small-town families was $3,662 a year. These averages probably are much higher than those for the state in general, in view of the fact that the studies were made with a selected group of thrifty families, it was pointed out.

Results of the studies are reported in a new bulletin, "Living Expenditures of a Selected Group of Illinois Farm and Small-Town Families," which has just been released by the college. It was written by Ruth Crawford Freeman, specialist in home accounts, and M. Attie Souder, formerly associate in home management extension, who conducted the studies.

Of the $2,489 value for the living of the farm families, $932 was furnished by the farm. Twelve per cent of the total was spent for life insurance and investments. The town families spent 28 per cent of their living expenditures for life insurance and investments.

Cash spent by the 70 farm families did not necessarily represent the income from the farms on which they lived, for in many cases it included income from other sources, such as investments, part-time work, borrowed money and capital. Of the $2,489, $1,657 represented the average cash income a family, $420 the average value of raised products used in the home or given away and $412 the average yearly rental value of the house. The range in the money value of the living enjoyed by the 70 families was from $1,143 to $7,432, giving the average of $2,489.

All 88 of the families were American born, and the most usual size of family was four. Nearly half of the 70 farm families owned the land on which their homes were located, and more than half owned between 161 and 320 acres.

In the highest income group, the one with $3,000 or more a year, education took the largest share of the money spent for general purposes. In the lower income groups the largest share went to the automobile.

The most noticeable difference in the general expenditures of farm and town families was the larger amount spent by town families for recreation.

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Interest In Nut Growing Reaches New Mark In Illinois

Interest in nut growing in Illinois has become so keen that the extension service of the College of Agriculture, University of Illinois, has launched a definite project for giving interested growers information and assistance on the production of desirable species and varieties, it is announced by L. E. Sawyer, forestry extension specialist of the college and of the Illinois State Natural History Survey.

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No Time Like The Present For Reforesting Rough Land

Illinois' rough, unprofitable farm land never could be taken out of cultivation and put back to timber at a better time than the present in the opinion of L. E. Sawyer, forestry extension specialist of the College of Agriculture, University of Illinois. The cost of reforesting such land at a profit would not be excessive, he said.

"Aside from eliminating low production on unprofitable farm land, such a plan would increase the value of the land, utilize idle and waste land, make unprofitable land productive and profitable, provide for a crop that continually increases in value every year, prevent soil erosion, conserve the water supply and regulate stream flow. In addition, reforestation would provide cover and food for wild life, would provide a permanent supply of Illinois timber for Illinois citizens, provide recreational areas, provide work, restore scenic beauty and soil fertility and create a foundation for future prosperity.

"The time of year at which a given planting job is done will depend entirely upon the section of the state and species of trees to be planted. In general, planting may be done any time in the fall after growth stops and before the ground freezes or in the spring after the ground thaws and before growth starts.

"Hardwood trees can be successfully planted either in the fall or spring in any section of the state. However, conifers should never be planted in the fall, except on lighter soils where there is no danger of their heaving during the winter.

"The product that is wanted will determine the spacing of the trees. For the production of timber the trees should be set about eight feet apart in rows about that same distance apart. This will take approximately 680 trees an acre. For fence post production the trees should be set about six feet apart each way, which will take about 1,200 trees an acre. For the production of Christmas trees a spacing of four by four feet, which requires about 2,700 trees an acre, is considered as being most desirable. Spacing of trees in a windbreak will depend upon the width of it. A single row windbreak should have the trees planted about eight feet apart. In a windbreak of two or more rows the trees should be spaced about eight feet apart in rows about ten feet apart, the trees being so planted that they will come between those of the adjacent row."

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Hog Cholera Threatening Losses As Serious As In 1926

Losses as serious as those of five years ago may result from the present outbreak of hog cholera in Illinois, unless immediate steps are taken to put down the disease, it is reported by officials of the animal pathology and hygiene laboratories at the College of Agriculture, University of Illinois.

The best method of combatting the disease is sanitation combined with the proper administration of hog cholera serum, it was recommended.

"All herds should be carefully inspected every day, and if disease appears, a veterinarian should be summoned to diagnose and treat the condition. Owners of unvaccinated hogs in infested areas are urged to call a veterinarian and have their hogs immunized without delay. Peddlers and cure-all medicine vendors should not be allowed on the premises."

Since September, when the outbreak started, there has been an increasing number of cases of cholera in specimens submitted to the university laboratories by veterinarians and farmers, according to Dr. E. A. Barger, pathologist of the Illinois State Department of Agriculture.

What makes the present emergency more alarming is the fact that a large percentage of all hogs are not vaccinated, as a result of the strict economy which farmers have been practicing during recent months, it was pointed out.

-M-

Careful Selling Only Way To Make Farm Timber Pay Now

Although present markets for timber are away down, indications are that there will be a great deal of timber sold from the farm woodlands of Illinois this coming winter just as there was last year, according to L. E. Sawyer, forestry extension specialist of the College of Agriculture, University of Illinois and the Illinois State Natural History Survey. If timber owners are to get as much as they should for their product, they will have to be careful in their marketing, he said.

"There is very little demand for the lower grades of lumber or logs, as the price of these is from 50 per cent to more than 100 per cent below the price of two years ago. Both the demand and price of the higher grades of logs and lumber have held up better than the lower grades, but even these better grades are off from 25 to 40 per cent in price and in some cases even more.

"The most logical thing for a man owning timber to do is to forget that he has it until market conditions improve. However, if it is necessary for him to sell to get ready cash, he can insure himself a better price for his timber by marketing it himself. Most of the sawmills and woodworking establishments that use Illinois timber will buy direct from the owner just as readily as they will from some middleman. Selling direct to the consumer will give the owner just as much or more for his timber as he could get by selling to a middleman and at the same time it will give him the middleman's profit as well.

"A man having timber for sale should not begin cutting until he has a definite order for a specified number of carloads of logs, thousand feet of lumber, cords of wood, sticks of piling or number of cross ties. Each tree selected for cutting should be chosen with care. If veneer logs are being sold, it is well to be sure that the logs which can be cut from the tree will come up to the specifications of the company that is buying the logs, otherwise they will be rejected or taken at a much reduced price. This is true not only for logs but also of every other produce."

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Good Old Timothy Back Number With New Forage Crops

Timothy, once a popular and widely grown hay crop, is running a hopeless fourth in a "race" which the College of Agriculture, University of Illinois is staging on its Mt. Morris soil experiment field to find out which of the common forage crops is the most benefit to the grain crop that follows. Results of the comparison to date have just been reported by A. L. Lang, assistant chief in soil experiment fields.

Timothy is the only non-legume in the contest, the other three crops being soybeans, red clover and alfalfa. Results of the comparison will go a long way toward settling which of the common forage crops deserve a permanent place in the heart of Illinois farm rotations.

The race is still young, but alfalfa is setting the pace with 67.8 bushels of corn to its credit as a two-year average. This is the average yield of the corn crop following the alfalfa. Even this early in the comparison, timothy is hopelessly out of it with 17.4 bushels less, or an average yield of 50.4 bushels of corn to its credit. Red clover is a close second with 64.6 bushels. Soybeans are in third place with 61.9 bushels, but even so this is an 11.5 bushels lead over the non-leguminous timothy.

The four crops are grown side by side in a four-year rotation of corn, oats, wheat and hay. In each case the entire growth is removed for hay and the root residues plowed down in the fall for the following corn crop.

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Added Returns of $500 Possible By Rotation Changes

From $100 to $500 a year could be added to the net income of most corn belt farms by changing the cropping system to include more of the crops that pay relativel high net returns an acre, according to M. L. Mosher of the farm organization and management department, College of Agriculture, University of Illinois. This is indicated by an analysis of records from hundreds of central Illinois farms, he said. Next to crop yields and livestock efficiency the proportion of tillable land in the more profitable crops often is the most important factor leading to differences in net incomes between farms.

As it is now, most Illinois corn belt farms keep only 50 to 60 per cent of the tillable land in corn, alfalfa, and sweet clover and from 30 to 40 per cent in small grain, timothy and bluegrass. Miscellaneous other crops occupy 10 to 15 per cent of the land. A change to a system providing for from 60 to 70 per cent in corn, alfalfa, and sweet clover and only 20 to 30 per cent of the tillable land in small grain would increase the income a farm as much as $500 in some cases with average prices, depending on present yields and the size of the farm, according to Mosher.

Cropping systems that are proving most profitable on good corn land in the corn belt counties are those that include as much land as possible in corn, alfalfa by itself or mixed with clovers as a hay crop, and sweet clover alone or mixed with other clovers and timothy as a pasture crop. Little or no timothy or bluegrass is found on the tillable land of the more profitable farms. Limited acreages of canning and truck crops are proving profitable to the extent that canning factories and city markets provide outlets for them. In some grain selling areas soybeans on part of the land have proven more profitable than small grain.

Under most conditions 20 to 25 per cent of the tillable land must necessarily be kept in some small grain to fill the gap between corn and alfalfa or clover. It is rare that oats pay for the cost of production when the grain is sold and the straw is not utilized for feed or bedding. However, in livestock areas, because of their feed value and the value of the straw as feed or bedding a limited acreage of oats fits in well with corn, alfalfa and sweet clover.

-M-

State's Leading Lamb Center Is Still In Adams County

Adams county maintained its leadership as the lamb producing center of Illinois when it shipped more prime, native lambs to the market this season than any other county in the state, according to a report by E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois. More sheep raisers than ever before cooperated in lamb improvement work which was pushed for the second year by Farm Adviser S. F. Russell and the extension service of the College of Agriculture, University of Illinois.

-M-

Present Conditions Pave Way For Home Orchard Comeback

The home orchard which occupied such a prominent place on Illinois farms a few decades ago is a thing of the past, but present economic conditions have again set farmers to thinking about a supply of home-grown fruits, says V. W. Kelley, assistant chief in pomology at the College of Agriculture, University of Illinois.

Large size was the downfall of the old-time home orchard. This point therefore should be guarded against in establishing a 20th century orchard, it was pointed out.

Farmers in years gone by thought that planting the trees and harvesting the crop was all there was to raising fruit. The result was over planting. Then when consumers began to demand better fruit, growers had to start spraying. pruning, and fertilizing. The outlay for adequate spraying equipment and time needed for caring for the trees were the bugaboos which led to neglect and failure of the orchard.

"First of all, the 20th century home orchard must be given reasonable care. A neglected orchard is unattractive, does not enhance the value of the farm, provides only a little low quality fruit, and is a menace to the properly cared for orchard in its vicinity. The time has passed when good fruit can be grown without spraying. The farmer who does not expect to spray should not waste time and money in planting the trees.

"Second, the orchard should be limited to such a size that can be cared for without taking too much time from the other operations of the general farm. The work in the orchard may sometimes have to be done between showers. The time to recognize this fact is when the orchard is being planned. Only a small number of varieties of each kind should be chosen, and particular attention must be given to reducing the number of trees of each variety. A single well cared for tree of each variety selected is better than a half dozen neglected trees.

"Third, the home orchard also should provide a succession of fruit throughout the season. With most fruits it is possible to select some varieties which ripen early and others which come on in mid-season or late. In this way fresh fruits can be provided over a longer period.

"Fourth, high quality should get first consideration in the selection of varieties. Personal preferences for particular varieties may be legitimately satisfied in choosing varieties for home use."

-M-

Can't Beat Hen As A Relief Agent At The Present Time

No other part of farming offers more opportunity for meeting the emergency of the times than does poultry, according to H. H. Alp, poultry extension specialist of the College of Agriculture, University of Illinois. The present poultry and egg market is one of the most profitable that flock owners have enjoyed for a long time, owing to the comparatively small change in poultry and egg prices and the big drop in grain prices, he pointed out.

Egg prices are now 74 per cent of what they were a year ago and chicken prices are 87 per cent of what they were in 1930. In contrast, oats and wheat prices are 47 per cent of what they were a year ago, while the corn price is only 40 per cent of what it was a year ago.

Liberal feeding will be essential for the kind of fall and winter production which will bring profit, Alp said. There must be plenty of hopper space, at least 20 feet for each 100 hens. Moist mash may have to be used to get the hens to eat more and to increase body weight. A moist mash made of two-thirds corn meal and one-third wheat middlings fed once a day to backward pullets will help develop them. The birds should be fed only what they will clean up in about ten minutes.

-M-

Costly Poultry Disease More Common In Fall Of Year

Outbreaks of "gappers," the "hard breathing," disease which has caused the poultry industry growing losses for many years, are more likely to occur in the fall, winter, and spring than at other seasons, according to a new circular just issued on the disease by the College of Agriculture, University of Illinois.

The scientific name of the disease is infectious laryngotracheitis (pronounced lar-in-go-tray-key-i-tis) and the title of the circular is, "Infectious Laryngotracheitis in Fowls." It was written by Robert Graham, chief in animal pathology and hygiene, and Frank Thorp, Jr., assistant in animal pathology. These two investigators are still studying the disease after having found a filterable-virus-like agent in two outbreaks in Illinois.

Prevention of the disease depends upon general sanitary measures, according to the new circular. There are no cures in the way of proven serums or vaccines, although flocks that have passed through the disease seem to be less susceptible to subsequent attacks. Fowls that have passed through their first laying season, whether exposed to the disease or not, seem more resistant than pullets.

In any flock suffering from the disease the acutely infected fowls should be promptly isolated or destroyed. Houses should be thoroughly cleaned and disinfected. A careful daily inspection should be made and all fowls which show any signs of coming down with the disease should be removed. Fowls that recover from the acute type or show a mild, subacute or chronic infection should not be returned to quarters with healthy fowls.

Newly purchased fowls and show fowls returned from exhibitions should be kept in quarantine and cared for by separate attendants for three weeks before being placed with the flock. Visitors and medicine salesmen should not be permitted to enter premises occupied by poultry, but if they do, they should use all care to avoid carrying the disease from infected to healthy fowls.

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Illinois Not Much Of A Plum State But Could Do Better

Illinois isn't much of a plum state, but nevertheless there are varieties of native American plums or crosses between them and Japanese plums which in general are well adapted to the state, according to R. L. McMunn of the pomology division, College of Agriculture, University of Illinois. As it is now, he pointed out, it is often impossible for housewives to get this esteemed fruit for canning, jellies, and eating raw. More than 100 varieties are being tested by the college experiment station in an effort to locate those which are adapted to Illinois.

Among the native and hybrid varieties there are at least five which are suited to the entire state, according to McMunn. Two of these, Sapa and Opata, are early ripening varieties and the other three, Underwood, Moniton and Elliot, later ripening kind. For the southern one-third of the state, Wild Goose, Shiro and Omaha can be added to the list.

Japanese varieties that can be recommended for the southern one-third of the state are Burbank and Abundance, but in that section regular fruiting cannot be expected. Of the European varieties, Moores (Arctic), Lombard and Reine Claude (Green Gage) can be fruited in the northern half of the state, but do not produce high quality fruit in southern Illinois owing to the hot summer. The small Shropshire Damson, well known as an excellent variety for spicing, is hardy over the entire state.

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Storage Movement May Boost Insect Losses In Grain

With the general movement among farmers to hold grain, insects are likely to cause more than the usual losses in seed value, weight of grain, quality and grade, according to a warning in a new circular just released by the College of Agriculture, University of Illinois. It is entitled, "How to Stop 'Weevil' Damage in Stored Grain," by W. P. Flint, chief entomologist of the Illinois State Natural History Survey. Grain held for any length of time in farmers' bins is almost sure to become infested with insects, it is pointed out.

The best measures for controlling stored grain insects and preventing damage are cleanliness and fumigation. Measures to prevent infestation have to be taken before the grain is in the bin. Much insect damage is caused by the fact that bins are not thoroughly clean before the grain is stored.

Carbon bisulfid is the best fumigant, all things considered, for farmers' grain bins or for piles of seed that can be kept in a tight room or container. The gas which it gives off is much heavier than air and sinks to the bottom of any container in which it is used. This gas is deadly to all forms of insect life if used strong enough and at temperatures in which the insects are active.

Carbon bisulfid is used at the rate of 1 pound to each 100 cubic feet of space in large tight bins, or 1 pound to each 80 bushels of grain. In small bins where there may be some leakage, 1 pound is used to each 50 bushels of grain. This chemical is not expensive, costing from 9 to 12 cents a pound. The sides and bottoms of the bins, rooms, or containers to be fumigated should be as nearly air-tight as possible. The average grain bin is far from air-tight. Where there is sure to be some leakage, the amount of carbon bisulfid must be increased.

The gas is poisonous to human beings. Persons doing the fumigating should leave the bin or room as soon as possible after applying the liquid. Any place that has been fumigated must always be ventilated thoroughly before it is entered. The gas also is highly explosive when mixed with air. Even a spark caused by striking a nail with a hammer is enough to cause an explosion.

-M-

Long Testing Adds $240 A Year To Returns From Herds

Records in the Tazewell County Dairy Herd Improvement Association show that members who have been testing for as long as four years are making $240 a year more, on the basis of a ten-cow herd, than they were five years ago, according to Paul Church, tester for the association. This is on the basis of present feed and milk prices, he said.

The Tazewell herd improvement association is one of 55 similar ones throughout the state in which more than 21,000 cows are being put to test for milk and butterfat production under supervision of the extension service, College of Agriculture, University of Illinois.

-M-

Homemaker Can Save By Making Own Cleaners At Home

One Illinois homemaker found that her cleaning supplies cost her $22.51 a year, or 43 cents a week. When farm incomes are reduced as they are now, a practical way for women to save money is to prepare some of these cleaning materials at home, according to a ten-page mimeographed manual, "Some Helps to Reduce the Cost of Cleaning," which has just been issued by the home economic extension service of the College of Agriculture, University of Illinois. It was written by Miss Gladys J. Ward, associate in home management.

How to soften hard water, how to make soap and a soap solution, how to prepare silver polish, how to make wax for furniture and floors and a liquid polish for furniture are explained in the manual. It also includes other suggestions about household cleaning operations and materials.

"An illustration of one saving that often can be made in farm homes is furnished by a home bureau member who obtained a year's supply (78 pounds) of laundry soap and toilet soap from surplus fat that she had on hand. The soap cost less than two cents a pound for materials that had to be bought.

"Then again, it has been estimated that a family of five using water of average hardness for Illinois loses or wastes at least 70 pounds of soap a year besides suffering the inconveniences and discomforts resulting from the use of hard water. Since washing soda and ammonia are considerably cheaper than soap, their use in properly made solutions will make a substantial reduction in soap costs for those who do not have all the soft water they need or who do not have water-softening equipment in their homes."

-M-

Multiplies Value Of Land By Using Soil Improvement

A ten-year soil building program with limestone, sweet clover and alfalfa enabled a Jersey county farmer to make his land worth $125 an acre last year, while other farmers in his community were making theirs worth only $29 an acre, according to a summary of his records by P. E. Johnston of the farm organization and management department, College of Agriculture, University of Illinois. He is one of the several thousand Illinois farmers enrolled in the college's farm account project and has made good use of his record as a guide to better paying methods.

The farm paid net receipts of $7.51 an acre in 1930, which is a return of 6 per cent on an investment of $125 an acre. The land was inventoried at $54 an acre, which is probably more than other land in the same community would sell for at the present time, Johnston said. It is a 200-acre farm located in a region where the land is quite rolling.

Gross receipts from the farm were $21 an acre as compared with $15 for the average of other account-keeping farmers in the same area. Twenty-five acres of sweet clover pasture and 16 acres of alfalfa provided feed for the livestock, even though the 1930 crop season was exceptionally dry. The permanent pasture on this farm has had limestone so that sweet clover grows along with the bluegrass and adds to the carrying capacity. The grain crops on the farm are corn and wheat. Wheat is used as a nurse crop and is sold on the market.

Feeds produced on the farm are fed to dairy cows and hogs. Success of the farm is a result of the amount of feed available, the character of the feed, and the efficiency with which it is fed to livestock. Alfalfa and sweet clover are both crops which help to balance grain ration and have the advantage of giving a heavy production an acre even on cheap land when it has had an application of limestone.

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Feed Wisdom Puts Hog Feeder Ahead in Present Times

Knowing his feeds was never more important to the swine raiser than it is during this period of fast and sometimes violent changes, says W. E. Carroll, chief in swine husbandry at the College of Agriculture, University of Illinois. For instance, tankage, the old standard supplement in hog rations, would have to be as cheap as $27 a ton and in some cases $13 a ton to compete with soybean oil meal at the present time, he said.

In recent weeks tankage has been quoted in car lots at $30 a ton and in ton lots at $35 to $37 on the same market that quoted soybean oil meal at prices around $18 a ton. In actual feeding trials with fattening pigs soybean oil meal has proved fully two-thirds as valuable a pound as tankage. On that basis soybean oil meal at $18 a ton would be equivalent to $27 tankage.

"If results of these tests can be relied upon, when tankage costs more than half again as much as soybean oil meal, the wise feeder will substitute the oil meal for the tankage. In the absence of any careful study of the subject it may be desirable in dry lot feeding to use tankage up to the extent of half the supplement until the pigs weigh approximately 75 pounds. After this, soybean oil meal may replace all the tankage if the price ratio is favorable. In dry lot feeding it also will probably pay to use alfalfa meal to the extent of one-fourth of the supplemental mixture.

"Soybean growers in some sections have a still more favorable opportunity. Some of the oil mills are offering to exchange 1,600 pounds of the oil meal for a ton of beans. The cash price of beans is around 20 cents a bushel, or just under $7 a ton. An exchange on this basis would bring the cost of the oil meal to $8.75 a ton. This would justify only $13.13 a ton for tankage.

"Fed in an otherwise suitable ration, soybean oil meal has produced a satisfactory quality of pork. A ration of corn and soybean oil meal is improved somewhat by a simple mineral mixture. One composed of equal parts of limestone, bone meal and salt has been found satisfactory in Illinois."

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Farmers Counting Savings Made Under Soil Testing Plan

Hancock county farmers are counting up tidy savings in limestone and clover seed made as a result of simple tests for lime and phosphorus on 1,301 acres of land, according to the annual report of Farm Adviser O. L. Welsh.

Some farmers found that limestone applied 15 years ago is still keeping their soils sweet. Others discovered spots and patches in their fields that were distinctly acid and needed limestone, while the rest of the field was sweet. Limestone applied on the sweet land would have been wasted, while clover seed sown on the acid patches would have been thrown away, Farm Adviser Welsh pointed out.

The soil testing was part of a state-wide project being sponsored by the extension service of the College of Agriculture, University of Illinois to help farmers lower their production costs and add to their profits by building up their crop yields. Yields in Hancock county, for instance, have dropped to the level of 32 bushels of corn an acre as a result of years of cropping without clovers. Land like that in the county could be made to yield as efficiently as 60 bushels of corn an acre with approved methods of soil management as recommended in the soil testing project.

As one direct result of the soil testing, 24 carloads of limestone and two carloads of phosphate have been used by Hancock county farmers during the past year.

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The Extension Messenger

COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
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Dean Davenport To Turn Farm Folks' Faces To Future

Faces of Illinois farm folks will be turned to the future by a veteran authority when Dr. Eugene Davenport, dean emeritus of the College of Agriculture, University of Illinois, addresses them in the first general session of the thirty-fourth annual Farm and Home Week, January 11 to 15. His subject will be "What Shall We Do With the Next Cycle?"

Now 75 years old, Dr. Davenport has seen farmers weather six distinct and acute business cycles since he became dean of the college in 1895. Between the age of 21 and the year he became dean, he saw two more, making a total of eight. He retired in 1922.

Dean Davenport will return from his home in Woodland, Mich., for his appearance at 3 p. m., Monday afternoon, January 11.

Scheduling of Dean Davenport as one of the principal speakers of the week is in keeping with the plan to keep this year's Farm and Home Week up to the standard of the 1931 session. At that time the meeting became the biggest farm and home gathering in the state when 3,146 farm folks from 97 counties registered.

"Development of the College of Agriculture under the stimulus, direction and leadership of Dean Davenport is recognized as an outstanding contribution to American agriculture," Dean H. W. Mumford said. "Coming to the university in 1895 he entered upon an ambitious and aggressive program as dean of the college of agriculture and later as director of the agricultural experiment station, reorganizing the work of the college and winning such support from its program that what had been one of the weakest departments of the institution achieved a prominent place in the university.

"Later the opportunity for advisory war service, the vice-presidency of the university and his retirement to an active writing career from his farm home have occupied his high talents.

"He is more than an agricultural leader. He is recognized as an educational philosopher. On all occasions he dignifies agriculture. His courage, his farsightedness and his public spirit are all unusual."

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Better Gardens Now Being Pushed As A Relief Measure

A state-wide movement for better farm gardens as a means of easing the stress of the times was put under way in a series of eight regional schools which the extension service of the College of Agriculture, University of Illinois started November 17, it is announced by L. A. Somers, vegetable gardening extension specialist.

The schedule includes Galesburg, November 17; Jacksonville, November 20; Dixon, December 1; Decatur, December 4; Belleville, December 15; Marion, December 17, and Olney December 18. The eighth school will be held at Yorkville on a date to be announced later.

Some farmers have netted as much as $227 a year from their gardens by following methods which have been worked out and recommended by the college. A total of 72 county farm advisers accompanied by leading farmers of their counties will attend the schools.

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Dry Corn Favors Farmer Movement To Hold 1932 Crop

One thing in favor of farmers in the present movement to store corn for higher prices is the fact that the grain is dry this fall and consequently will shrink less than usual in storage, says G. H. Dungan, associate chief in crop production at the College of Agriculture, University of Illinois.

Also when corn is selling at a low figure in the fall, the price a bushel the next summer does not have to be so high to compensate for shrinkage as when the price at husking time is high. According to nine years' observations by the college, 50-cent corn in November has to rise but 10 cents a bushel by the next August in order to net the same to the grower, whereas 25-cent corn in November must go up only 5 cents to cover the shrinkage loss, he pointed out.

"The most important factor affecting the amount of shrinkage is the moisture in the ears at husking time. In shrinkage experiments some corn that contained 20.8 per cent moisture when it went into the crib lost 13.5 per cent of its weight by the following July. In the same length of time a second lot of corn containing 21.8 per cent moisture lost 15.8 per cent and a third lot containing 26.1 per cent moisture lost 17.4 per cent.

"An average of nine years' tests showed the maximum shrinkage occurred in July and August of the following year. During September and October corn absorbs a small amount of moisture from the air, so there is a slight, although insignificant gain in weight."

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Disguising Old Clothing Will Solve Women's Quandary

Clothing is the first thing that feels the pinch of hard times, but this does not mean that women or their children must stay at home because they "have no clothes to wear," according to a four-page mimeographed leaflet just issued by the home economics extension service of the College of Agriculture, University of Illinois.

It is entitled, "Disguising Last Year's Clothes," and is designed to: (1) help in the utilization of material on hand, thus freeing dollars for service in other parts of the family budget; (2) help women who have little cash to keep up family standards and morale by helping them to look well dressed, and (3) keep women from staying at home because they "have no clothes to wear." It was prepared by Miss Edna Gray, associate in clothing extension.

"A summary of the few of the outstanding differences between the styles of this year and of last year is encouraging for the woman who must find ways this winter of making her dollars go farther than in the past. For one thing, skirt lengths are almost unchanged. One of the outstanding changes in style this winter is in the length proportion of skirt to waist."

Color contrast also is an important feature of fall dresses, according to the manual. This perhaps will help many women utilize dresses not otherwise usable. Contrast may take the form of a bright scarf, a bright blouse, sleeve trim, collar, vest or even yokes. Many dresses will look like suits or coats. Hip length coats are perhaps more popular than either the longer or shorter ones. This suit type of dress offers many possibilities to the home sewer who is making over last year's garments. Wool suits worn last spring can be supplied with colorful blouses or vestees and worn all winter as dresses.

The vogue for the use of plain dark colors, such as brown, dark green, and wine red, as well as black, offers a wonderful opportunity to make old clothes look new by re-dyeing, the manual points out.

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No Sow Should Go "Protein Hungry" With Beans Cheap

Cheap soybeans have put proteins for brood sows on the bargain counter, says W. E. Carroll, chief in swine husbandry at the College of Agriculture, University of Illinois. This should be one winter, therefore, when brood sows in most sections of the corn belt will not suffer for lack of this nutrient in their rations, he said.

Tests at the college have proved soybeans are satisfactory as a supplement to farm grains for brood sows during gestation. About two-thirds to three-fourths of a pound of beans a head daily was fed. One and a half bushels of beans, therefore, will carry a sow through her gestation period of 114 days. The average farm price of beans is now about 20 cents a bushel, which means a total outlay for protein supplement of only 30 cents a head for the sow herd.

"In addition to farm grains and soybeans, sows should be given what legume hay of good quality they will eat. The hay can be fed from a simple feed rack or on a feeding floor. Alfalfa hay is the standard, although soybean hay of good quality also has been fed successfully. The sows also should have access to a mineral mixture, because both corn and soybeans lack calcium. A simple mixture of equal parts of limestone, bone meal and salt has been found satisfactory.

"An item fully as important as the ration is the exercise the sows get. They should be forced to exercise if they do not do so voluntarily. A large pasture or corn field in which the sows are gathering part of their feed is excellent.

"Sows should be kept in thrifty, vigorous condition but should not be allowed to become over fat. A sow in a good state of flesh will suckle her litter more successfully than a thin sow, while an over fat one becomes lazy and awkward and is a menace to her pigs."

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State Farm Meet To Aim At Lowering Machinery Costs

Power and machinery bills on some Illinois farms run as high as $8 an acre, or four times as much as they do on other farms. This one item can make as much as $800 a year difference in farm earnings. Methods of reducing labor, power and machinery costs therefore are to be stressed in one of the 25 courses to be offered during the thirty-fourth annual Farm and Home Week, January 11 to 15, at the College of Agriculture, University of Illinois.

Facts will be brought out to show how labor, power and machinery may be used to the best advantage on Illinois farms. The importance of fitting various types of power to particular needs will be discussed. Comparative costs for tractor and non-tractor farms will be shown. Practices which help to decrease labor, power and machinery costs will be given major consideration. Small grain and corn harvesting methods will be analyzed.

Adjusting labor, power and machinery to Illinois farms will be taken up in the first session by P. E. Johnston, extension specialist in farm organization and management.

Reducing labor, power and machinery costs on Illinois farms will be considered in a second session with J. E. Wills, assistant in farm organization and management, as the speaker.

Methods of reducing harvesting costs of small-grain crops will be explained in the third session by R. H. Wilcox, associate chief in farm organization and management.

Methods of reducing corn harvesting costs will be studied in a fourth session with Professor Johnston as the speaker.

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Farmers Lightening Tasks By Using More Electricity

Business conditions are not keeping Illinois farmers from lightening their drudgeries with electricity, as shown by the fact that last year there was an increase of 25 per cent in the number of Illinois farmers who obtained electric service from power lines for the first time.

This is announced in the annual report of the experiment station, College of Agriculture, University of Illinois, where studies are being made on the use of electric power on farms.

Further evidence of the increased use of electricity by farmers is seen in the fact that farmers on an experimental line established in 1925 continued to extend their use of the service. The amount of electricity used by these farmers during 1930-31 was increased 21 per cent over 1929-30.

Although farmers are showing continued and increased interest, only about one out of ten farms in the state now has elctric service, according to the report.

The variety of uses on the farm creates a reasonably satisfactory demand for electric power, the report explains. However, one of the important problems in using electricity on farms is to extend it to work outside the home. Increased use lowers the unit cost of service. It is evident, the report says, that if additional uses could be made of the service during the winter months, it would give a more uniform load throughout the year.

Low consumption during the winter months is accounted for by the fact that most farm housewives use coal stoves to a larger extent in the winter, because they depend on them to help heat their kitchens. On the experimental farms the total consumption by seven electric ranges varied from 893 kilowatt hours in July to 171 kilowatt hours in November. The total consumption by four refrigerators varied from 440 kilowatt hours in July to 82 kilowatt hours in December. Five brooders were used during March, April and May with the high consumption in April.

The lighting circuit load was fairly low in summer and increased to its highest point during the winter months. The consumption by two milking machines was fairly constant throughout the year, varying from 50 to 67 kilowatt hours a month.

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New Studies Will Show Costs Vs. Savings In Trucks

Whether or not the increasing number of trucks being used on Illinois farms cost more than they save is being determined in a special study being made this year by the farm organization and management department of the College of Agriculture, University of Illinois.

One hundred thirty-nine farmers in 56 counties are cooperating in the study. They are keeping a special truck work sheet which lists in detail the kinds of material hauled, the distance hauled, the weight of the load and the cost of operating the truck. The study also will show the cost a mile for operating trucks, as well as the total labor, power and machinery costs on farms where trucks are used as compared with farms having no trucks.

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Profits To Make Poultry Profitable At Farm-Home Week

Poultry raising is hard to beat as a farm money maker at the present time. New proof of this is expected to be shown by the way farmers and their wives turn out for the poultry short course during the thirty-fourth annual Farm and Home Week, January 11 to 15, at the College of Agriculture, University of Illinois. Twenty-four other courses on different phases of farming and homemaking also are to be offered during the week.

F. B. Hutt, professor of animal genetics at the College of Agriculture, University of Minnesota, and for several years associated with the poultry industry, has been scheduled as a special speaker for the poultrymen.

In opening the course, January 11, H. H. Alp, poultry extension specialist, will discuss, "Shall I Build a New Poultry House?" "Hatching the 1932 Crop of Chickens," by L. E. Card, chief in poultry husbandry, will be the other topic for the first session.

Breeding for heavier laying and higher profits will be stressed in the sessions on January 12. The program includes, "What Trapnest Records Show," by Dr. Card; "Selecting the Breeding Male," by Dr. Hutt; "Feeding the Breeding Flock," by H. J. Sloan, first assistant in poultry husbandry, and, "Breeding Plans for 1932," by Dr. Hutt.

Control of diseases and parasites, which are now a heavy drain on the Illinois poultryman's profits, will be taken up January 13. "Chicken Pox Control," will be discussed by E. A. Barger, Illinois State Department of Agriculture; "Preventing Common Chick Diseases," by Frank Thorp, Jr., assistant in animal pathology; "Controlling External Parasites of Poultry," by W. P. Flint, chief entomologist of the Illinois Natural History Survey, and, "Controlling Internal Parasites of Poultry," by J. P. Torrey, of the Illinois State Department of Agriculture.

Marketing of poultry and eggs will have the whole day of January 14 given over to it.

"Brooding Chicks in Batteries," by Dr. Sloan and, "Making Money From Poultry in 1932," will be the subjects for the final day, January 15.

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Southern Illinois Ideal For Making Money On Lambs

Conditions are right for hundreds of southern Illinois farmers to cash in on early lambs if they would follow the example of Harvey Toler in Johnson county, says E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois.

Last spring Toler had ten grade Hampshire lambs which were dropped in January and which he sold in April, averaging 72 pounds in St. Louis at $10 a hundredweight, or a total of $7.20 a head. Such lambs would bring about $6.50 a hundred pounds this fall or less than $5 a head, Robbins pointed out. The ewes had cowpea hay and pasture. The lambs had no extra grain.

Toler's experience corresponds with that of some other southern Illinois farmers who have found that the early grazing which their ewes get because of the short winter sustains a big milk flow and makes the lambs fat at an early age without extra grain. Of course, this result can be obtained only with well bred lambs.

The system is well adapted to hundreds of farms in the southern part of the state, where grass grows better than anything else and cowpeas or soybeans can be grown from winter roughage. Southern Illinois farmers with their mild winters can raise early lambs easier than farmers in the northern part of the state. In recent years early lambs fattened and sold before June usually have brought more dollars a head than late lambs ever would bring.

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That Daily Apple Should Be The Right One For The Use

If "An apple a day keeps the doctor away," the commercial crop of Illinois this year is enough to give the doctors of the state a 90-day vacation, according to R. S. Marsh, horticultural extension specialist of the College of Agriculture, University of Illinois.

However, even an apple has to be used right to be fully appreciated, he said. For instance, there are six out of 13 Illinois varieties that are excellent for pies and apple dumplings. They are Jonathan, Grimes Golden, Staymen Winesap, Winesap, Wealthy and Winter Banana.

When it comes to being eaten uncooked, the varieties that rate as excellent are Jonathan, Grimes Golden, Delicious, Staymen Winesap and Golden Delicious. Good eating varieties are Winesap, Wealthy and Cortland. Rome Beauty, Willow Twig and Winter Banana rate as fair for eating, while Ben Davis is poor.

Rome Beauty, Ben Davis and Staymen Winesap are excellent for baking; Jonathan, Grimes Golden, Delicious, Winesap, Willow Twig, York Imperial, Cortland and Winter Banana are good; Wealthy is fair, and Golden Delicious is poor.

Transparent and Duchess are best for sauce. Ben Davis, York Imperial, Cortland, Wealthy and Winter Banana are only fair. Jonathan, Grimes Golden, Rome Beauty, Delicious, Staymen Winesap, Winesap, Willow Twig and Golden Delicious all rate as poor for sauce.

For stewing, Rome Beauty and Wealthy are excellent; Jonathan, Grimes Golden, Ben Davis, Winesap, Willow Twig, York Imperial, Cortland, Golden Delicious and Winter Banana are good, and Delicious and Staymen Winesap are fair.

Jonathan, Winesap, Willow Twig and Wealthy are good for jelly; Rome Beauty, Ben Davis, Staymen Winesap, York Imperial, Golden Delicious and Winter Banana are fair, and Grimes Golden, Delicious and Golden Delicious are poor.

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Two Farm Wastes Are Profit Eaters Even In Good Times

With all their efficiency, American farmers are putting up with two great wastes that would be profit killers even in prosperous times, according to W. A. Foster, specialist in rural architecture at the College of Agriculture, University of Illinois. The first is lack of shelter for all livestock, particularly in severe weather, and the second, insufficient storage space for farm machinery, grain and roughage.

Each is unprofitable as well as wasteful. Unsheltered livestock not only loses weight, vigor and health but also eats more feed. Unsheltered machinery rusts away and is shortened in life. Unsheltered grain spoils, loses food value and grades lower when marketed, likewise, roughage wastes from exposure to wind and rain.

Young stock and horses wintering in corn stalks can be protected with a straw shelter during cold weather. Such a shelter can be built at little or no expense. A few forked poles or posts are set in a rectangular plan and old fencing placed on the north, east and west, leaving the south side open. The posts are then connected with poles and covered on top with brush, cornstalks and straw. The three sides are banked with straw or fodder. If straw is not plentiful, it can be made to go farther if it is held in place with wire. If there is plenty of straw, the stock will feed upon it and work it into manure, which will more than pay for the materials and labor required in building the shelter.

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"Baby Beef" Is Cleared Of What Was Thought A Flaw

"Baby beef", now the vogue in keeping with America's smaller families, tinier apartments and hurried meal preparation, has been cleared of what was thought to be a serious fault, as a result of studies by the experiment station of the College of Agriculture, University of Illinois.

Baby beef often lacks marbling, which in aged cattle is associated with quality. Evidence was obtained in the experiments, however, to show that this lack of marbling may not be serious from the standpoint of the housewife, as the lean may absorb fat from the surrounding tissue during cooking. This absorbed fat makes the meat juicier, adds to the flavor and food value of the lean and is a partial substitute for marbling fat. Since finished baby beef is naturally tender, the effect of marbling upon tenderness will not be missed.

Marbling, it was explained by Professor Sleeter Bull, associate chief in meats, is a mixing of fat with the lean meat, giving it a marbled appearance. In the days before baby beef it was the accepted sign of high quality meat, because it has a bearing both on tenderness and juiciness of aged beef. When baby beef was introduced, modern housewives accepted it and then demanded it, because its size more nearly met their needs. However, lack of marbling remained a mooted question with connoisseurs of beef.

Cooking tests made by Dr. H. H. Mitchell and his associates in the division of animal nutrition showed that the lean meat in baby beef increased in fat at the expense of the surrounding fatty tissue. Of the fat melted out of this tissue, approximately 90 per cent went into the drippings, while about 10 per cent penetrated into the lean. The fat content of the lean, as a result, increased 1.5 per cent, equivalent to 14.5 per cent of the original fat content. The energy value of the lean was increased by 6 per cent. The longer the roast is cooked the greater will these exchanges of fat be.

It was concluded that while extensive marbling is needed for quality in beef from aged cattle, it is not essential for quality in baby beef, so long as there is a good covering of fat on the cut.

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Warmed Drinking Water In Winter Worth 38 Cents A Hen

A little thing like warming the drinking water for chickens in winter may add as much as 38 cents a hen to the gross returns from the flock, according to records collected by the farm organization and management department, College of Agriculture, University of Illinois. The annual gross return for each hen over a two-year period averaged $3.58 in the case of 328 records where the water was warmed all winter. In contrast, the return was only $3.20 in the case of 35 records where the hens got only cold water. Hens in flocks that got warm water all winter averaged 95 eggs each, while those in flocks getting only cold water averaged but 80 eggs each.

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Soybean Oil Meal Promising Outlet For Crop Surplus

Soybean oil meal is panning out as a livestock feed in a way that promises much toward solution of the soybean surplus, says E. T. Robbins, livestock extension specialist of the College of Agriculture, University of Illinois.

Just returned from a series of county livestock tours, Robbins reports that farmers appreciate the quality and economy of soybean oil meal as a protein supplement. Even in parts of the state where soybeans are grown very little, stockmen are using this high-protein by-product of the soybean industry. This is providing an outlet for farmers in the central part of the state who are growing soybeans in their crop rotations and need a market for their production, he explained.

"Greenwalt Brothers, of Carroll county, have 120 Texas calves which they plan to feed all the corn they will eat with 1 pound of soybean oil meal to 7 pounds of corn. They also will feed about 8 pounds of silage and 2 pounds of alfalfa hay daily a calf. Last year they had splendid results with this same plan, excepting that they used cottonseed meal at that time. This type of ration is one which has given the best results in recent years at the College of Agriculture, University of Illinois, and Greenwalt Brothers had fine success with it. They sold the calves at about the top of the market.

"Fred Guenzler, also of Carroll county, was feeding soybean oil meal to add protein to the ration for more than 200 cattle. He also was using some cottonseed meal. The bulk of the ration was made up of corn and alfalfa hay. His steers were doing very well, and he was pleased with the soybean oil meal as a good, cheap source of protein.

"In Stephenson county William Hummermeier is feeding more than 100 range calves on oats, ground barley, corn, soybean oil meal, cottonseed meal and alfalfa hay. August Otto in the same county is feeding 115 shotes which have the run of the corn field and are getting a mixture of 2 parts tankage, 1 part soybean oil meal and 1 part alfalfa meal in a self-feeder."

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Many Pests Can Spoil Plants Not Guarded In The House

Any one of a dozen or more insect pests can soon spoil the many house plants that are brought in from the outdoors at this time of the year, according to a warning to the College of Agriculture, University of Illinois by C. C. Compton, assistant entomologist of the Illinois State Natural History Survey. Most plants can be cleaned up in a short time and at very little expense if the proper steps are taken.

In the case of plants that are blooming, pyrethrum sprays are best, since they are less likely to discolor the blooms. Infested plants should be removed to the back porch, yard or, in cold weather, to the basement and thoroughly sprayed according to the directions on the pyrethrum container. The excess spray can be removed by shaking the plants gently. The treatment should be continued at weekly intervals until the plants are clean. Even spraying plants forcibly with clear water every week or ten days will aid in keeping them free from insects.

Plants not in bloom and foliage plants can be cleaned up by spraying them with or dipping them in a 40 per cent nicotine sulphate solution. This solution is used at the rate of 1 ounce to 4 or 5 gallons of water into which has been dissolved two or three ounces of soap.

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Illinois Hens Don't Need Fire To Lay Eggs In Winter

Fine laying records have been made by chickens under weather conditions far more severe than they ever get in Illinois, and these records have been made without the use of artificial heat, says H. H. Alp, poultry extension specialist of the College of Agriculture, University of Illinois. There is little evidence to prove that it would pay the average farm flock owner to install a regular heating system in his poultry houses.

"However, a flock that is laying heavily should be protected from severe cold weather. Some houses are considerably colder than others, and in such cases it might be advisable to set up the brooder stove during a cold spell.

"Curtains made from feed sacks and dropped in front of the roosts during cold weather are a help. Dividing the roosts into sections by means of partitions also will help protect the birds. The partitions are built from the top of the droppings board to the ceiling of the house and extend in width only a little beyond the first roost.

"In a house with a high ceiling a small straw loft put in just above the roosts and extending the width of the droppings board is of real value in cold weather.

"If a cold spell is reported to be on its way, the flock owner should think as much about his pullets and hens as he does about his car. One way to prevent egg production dropping off in a cold wave is to give an extra feeding of grain either in the early morning or late evening. A warm, moist mash also may be used. The feeding of hot mashes is not advisable, as this makes the flock feel the cold a little more than it otherwise would.

"A combination of a dirty house and severe cold weather is especially hard on egg production. The house should be cleaned out and fresh clean litter put in. This helps make the hens more contented and keeps them a little more active. The droppings board should be kept clean all winter. Too often it is not cleaned until spring. This favors the spread of roup and colds. During cold weather it is much easier to clean the droppings boards if after each cleaning they are covered with rock phosphate, gypsum, ashes, sand, ground corn cobs or similar material."

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Buildings Put Up Without Plans Are A Big Farm Waste

More than 16 per cent of Illinois' farm wealth is in buildings, too many of which are still being put up without plans, says W. A. Foster, specialist in rural architecture at the College of Agriculture, University of Illinois. While a cut and fit method, if tried long enough, may get something, it is wasteful to spoil materials and consume valuable time in spoiling them, he pointed out.

"Cost is the painful part of building. If only a few boards, a hundred brick, a yard of concrete and some nails are saved, building plans are worth while. Adding the time required to fabricate these materials makes the saving even bigger. There is the added satisfaction of getting the building that was wanted when it is put up from plans.

"Among other things a good plan shows the kind and quantity of materials, the correct method of construction and pictures the completed job. In other words the good plan shows graphically the assembled materials and members in the correct arrangement so the workman may proceed in an orderly way without waste."

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State Campaign Now On To Restore Farm Horse Power

What is believed to be the most concerted drive ever made to restore horse power on Illinois farms will result in not less than 100,000 horses being treated during December to rid them of internal parasites such as worms and bots, it is announced by Dr. Robert Graham, chief in animal pathology and hygiene, at the College of Agriculture, University of Illinois.

Approximately 25 of the most important horse counties in the state will participate in the campaign which is being conducted by the college of cooperation with graduate veterinarians, county farm advisers and other interested agencies. Liquid carbon disulphide, which is administered in capsules and which has proved superior in tests made by the college, will be used in the work.

Once the only source of power available to Illinois farmers, horses and mules have since had their efficiency sapped by the mounting inroads of parasites, Dr. Graham reported. Botflies and botfly larvae, roundworms and palisade worms drain the strength of horses, make them hard to handle in summer, run up feed bills and cut down the work the animals do, he said. Few horses are free from such parasites.

Last year, after a preliminary campaign, 90 per cent of the farmers reported that they noticed an improvement in their work stock. A total of 8,461 horses were treated for 1,090 farmers in eight counties in this preliminary work.

Five counties with a horse population close to 35,000 animals are pushing the parasite control campaign on a county-wide basis this month. They are Marshall, Putnam, Ford, Piatt and McLean. Twenty other counties are carrying on the work in one or more communities and some of them may extend it to a county-wide basis, Dr. Graham reported.

A special circular, No. 378, Common Animal Parasites of Horses, is being distributed by the college to further the campaign.

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Sod Land Yields Best Corn Profit If Fall Plowed

Illinois farmers can stretch the margin of profit on their corn crops as much as 8 to 12 bushels an acre by plowing sod land in the fall instead of in the spring just before the corn is planted, it is reported to the College of Agriculture, University of Illinois by J. H. Bigger, assistant entomologist of the Illinois State Natural History Survey.

The fall plowing reduces the infestation of grape colaspis, a serious corn pest, as much as 60 per cent in the following corn crop and thereby protects yields, he pointed out. This was established in three year's field tests made by the natural history survey on central Illinois farms. Fall plowing of grass land also is known to help control wireworms, some rootworms and certain stages of the white grubs, Bigger reported. Plowing of all sod land in the fall, where the lay of the land permits, costs no more than spring plowing.

-M-

Anyone Can Learn Prize Secrets Of Flower Gardening

There's no such thing anymore as a secret about successful flower gardening, in the opinion of H. B. Dorner, chief in floriculture at the College of Agriculture, University of Illinois. No one need go into flower gardening blindly when so much valuable information may be had almost for the asking, he said. His division has prepared a list of books and bulletins on all phases of garden work.

"Through books gardeners can inform themselves concerning plants and their requirements and also concerning good garden practices. One can learn how to plan a garden, how to prepare the soil properly for the best development of the plants, what plants to select, how to care for the garden, what fertilizers to use and how to protect plants from diseases and insect pests.

"Garden books of today not only are informative but also are interesting reading as well. There are books on general gardening as well as on special subjects such as rock gardening, water gardening, perennials, annuals, climbing plants, shrubs and trees, evergreens, lilies, bulbous plants and many other subjects. Then too, for those interested there are books on plant hunting by such notable explorers as Wilson and Fairchild. There also are books on window gardening and gardening and flower arrangement.

"Those who can not afford to build up a garden library of their own might interest their friends and make up a list of desirable books. Each can buy a book or two and by exchanging, one can get much valuable reading at little expense.

"In addition to books there are a number of station, extension and government bulletins that are full of useful information. Most of these can be obtained at the mere cost of a postcard. Then too, there are several good magazines that will repay one for reading. These contain many interesting articles by garden lovers and specialists."

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Scant Yields Off Clay Land Are No Longer A Problem

The complex problem of getting good returns from the "tight clay" land around Cumberland and Jasper counties is being solved by the College of Agriculture, University of Illinois through the use of limestone and manure as soil treatment, it is announced by C. H. Farnham, assistant in soil experiment fields.

Land which otherwise would yield only 1 bushel of wheat and 8 bushels of corn an acre has been made to raise 22 bushels of wheat and 40 bushels of corn an acre when treated with manure and limestone. These results were obtained on the soil experiment field which the college maintains at Newton in Jasper county. The manure-limestone combination paid net returns of $14.05 an acre a year after the cost of fertilizers was taken out. This was the best showing made by any of the fertilizers that were tried.

"Enough limestone must be applied to grow clovers well, and a rotation used that includes a legume every three or four years. All available barnyard manure should be spread on the land just ahead of the corn crop. Manure adds much-needed organic matter in addition to nitrogen, phosphorus and potassium.

"In addition to soil treatment, drainage has to be taken care of. As a rule tiling is practically out of the question as the tile often fail to 'draw.' Ditching has been a big help in many cases. Some farmers plow furrows across their fields after wheat and other crops have been planted. Still others establish definite 'lands' and plow toward the center of these until after a few years a crown is formed."

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All The Darned Socks Can't Even Cover 4-H Club Goals

Darning of almost a thousand pairs of stockings during the past year is among the achievements in McLean County's record as the leading girls' 4-H club county of the state.

Any wife or mother knows that's a lot of stockings, says Miss Clara R. Brian, home adviser of the county. But, she adds, such cold figures don't begin to tell the story of how homes in the county will be bettered in years to come by results of the past year's work. McLean county took the leadership in a year when, for the first time, every county of the state carried on girls' 4-H club work as conducted by the home economics extension service of the College of Agriculture, University of Illinois.

A total of 527 girls, 495 of them rural, were enrolled in 54 clubs organized to help girls of the county learn approved homemaking practices. More than 97 per cent of the girls, or 512 of them, completed their projects. Of the total enrollment 231 girls were in club work for the first time this year, 157 for the second year, 76 for the third year, 35 for the fourth year, 22 for the fifth year and 6 are in or are entering college.

Sixty-nine teams were trained to demonstrate different homemaking practices, 327 girls gave such demonstration and 5,618 people attended the demonstrations. Fourteen judging teams were trained and 103 girls have had judging experience.

The clothing project was the most popular, with 387 girls enrolled and 377 of them completing the work. They made a total of 1,122 garments, including 615 undergarments, 448 dresses and 59 other garments. One hundred fifty garments were made over, 1,009 garments mended and 947 pairs of stockings darned. A total of 194 of the girls do their own mending and 135 girls do the family mending. One hundred thirty-nine girls wear approved shoes.

All but six of 128 girls enrolled in the foods project finished the work. They planned, prepared and served 5,007 meals. They also prepared 1,766 dishes, canned 487 quarts of fruit, 268 quarts of vegetables and 158 quarts of meat and made 753 glasses of jelly and marmalade. They baked 48 loaves of yeast bread, 53 dozen quick breads, 56 dozen cookies, 47 cakes, 35 pies and 44 puddings. Three of the girls are doing the family baking.

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Nine Farms In One County Are 100 Per Cent Limed

Nine Hancock county farm owners are on the "honor list" of those who have 100 per cent of their farms limed to sweeten the soil for more efficient and profitable crop yields, according to a report by Farm Adviser O. L. Welsh.

They are Alex Denny, Augusta; J. A. Ruger, Carthage; W. B. Robinson, Warsaw; H. C. Stevenson farm operated by Edward H. Stevenson, Elvaston; B. Geissler farm operated by Theodore Geissler, Carthage; L. C. Dadant, Hamilton; O. H. Felgar, Bowen; Allen & Weinberg, Phymouth, and Edward Whitcomb, Ferris.

These and other farmers of the county are cooperating with Farm Adviser O. L. Welsh and the extension service of the College of Agriculture, University of Illinois in soil improvement work aimed at overcoming the handicap of slumping crop yields. Years of cropping without clovers has pulled crop yields in the county down to the level of 32 bushels of corn an acre. Land in the county could be made to yield as efficiently as 60 bushels of corn an acre under approved methods recommended in the college's soil building program.

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The Extension Messenger
COLLEGE OF AGRICULTURE—UNIVERSITY OF ILLINOIS

Timely Notes for Farm Advisers and others from the Agricultural College,
Experiment Station, and Extension Service

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Sec. Hyde Will Head Main Speakers At Farm-Home Week

Arthur M. Hyde, secretary of agriculture, has assured Dean H. W. Mumford that he will be on hand to deliver the closing address of the thirty-fourth annual Farm and Home Week, January 11 to 15, at the College of Agriculture, University of Illinois.

He is expected to chart the future course of American farming in an address on, "Looking Ahead in Agriculture." He is scheduled for 10 a.m., Friday, January 15.

Known as a brilliant, able and witty public official, Secretary Hyde long ago established himself as a friend of the farmer back in his home state of Missouri. One writer has said that if there is a distinct characteristic of Arthur Hyde it is courage.

It has been said that President Hoover selected Mr. Hyde not because of his agricultural knowledge, but because he was impressed with his ability as an executive. He is a lawyer and one of the best in Missouri. Most of his life has been spent in small towns, he knows country people, is country-minded and is sympathetic. He is the youngest member of the Cabinet, having been born July 12, 1877.

Scheduling of Secretary Hyde completes a corps of leading Farm and Home Week speakers including President F. D. Farrell, Kansas State Agricultural College, Manhattan; Eugene Davenport, dean emeritus of the College of Agriculture, University of Illinois; W. Elmer Ekblaw, professor of geography at Clark University, Worcester, Massachusetts, and an authority on Russia; G. F. Warren, head of the department of agricultural economics and farm management, Cornell University, Ithaca, New York, and Dr. Caroline B. Hedger, of the Elizabeth McCormick Memorial, Chicago.

In addition to these authorities, Farm and Home Week will feature 35 short courses arranged by various departments of the university to cover everything from beekeeping to country baseball. Entertainment features will include an ice carnival, a University of Illinois band concert, the state rural music and drama tournament and a student-farmer fair.

When 3,146 farmers, homemakers and rural leaders from 98 of the 102 counties registered for the 1931 Farm and Home Week, the meeting became the state's biggest farm and home event. The session this year is expected to come up to this standard, Dean Mumford announced.

Interest of the women will again be centered in the annual homemakers' conference, Wednesday and Thursday. Throughout the four days of the week, however, there will be special courses on foods, nutrition, music and dramatics, home beautification and poultry.

The Illinois State Federation of Home Bureaus, the Illinois Crop Improvement Association, the Illinois group of the American Society of Farm Managers, the Illinois Jersey Cattle Club, the Illinois Brown Swiss Cattle Breeders' Association, alumni of the College of Agriculture and other organizations are planning special sessions for the week.

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Printed in furtherance of the Agricultural Extension Act approved by Congress May 8, 1914. H. W. Mumford, Director.

Wider Use Is Urged Of Cereal Grains As Human Food

More general and widespread use may well be made of cereal grains as human food at a time like this when these grains cost so little and many families have less money than usual to spend for food, according to a new circular, "Some Ways of Cooking and Using Whole and Cracked Wheat," just issued by the home economics department of the College of Agriculture, University of Illinois.

Whole grains are highly desirable substitutes for commercially prepared breakfast foods, which are more expensive and often of lower nutritive value than the original whole grain, the circular points out. However, cereals are not complete foods, either alone or in mixtures with one another, and must be used in conjunction with so-called "protective foods," it is explained.

Instructions on preparing wheat for cooking, cooking whole and cracked wheat, recipes for using cooked whole wheat and cooked cracked wheat and menus are given in the circular. The whole wheat recipes include those for cheese pudding, scalloped whole wheat and cheese, chop suey, chili, pilau, fish and tomato, chowder, muffins, raisin sandwich loaf, custard, brown betty and breakfast cereal. The cracked wheat recipes include those for breakfast cereal, mush, griddle cakes, muffins and hermits.

Generous quantities of whole wheat may be used daily if judgment is used in supplementing the diet with those foods supplying factors in which wheat is lacking, the circular says. Vegetables and fruit may be ranked next in importance after grain products and milk as constituents of an economical and well balanced diet. They tend to correct both the mineral and the vitamin deficiencies of the grain products and in a sense they supplement the milk also, in that many of the vegetables and fruits are rich in iron or vitamin C or both.

"From the standpoint of promotion of growth in children and of conservation of health, it is obvious that whole wheat can not take the place of liberal amounts of milk, vegetables and fruits in the daily menu. Those foods that may well be replaced by whole wheat without lessening the nutritive value of the diet are the commercially prepared breakfast foods, the commercially prepared foods containing refined flour, such as bread, macaroni, crackers and noodles, imported grains such as rice, and potatoes.

"On account of the large amount of coarse, indigestible material in the whole wheat kernel, whole wheat should not be fed to infants or young children or to adults suffering from digestive disturbances. For those individuals the use of wheat must be restricted to the highly milled products.

"With these exceptions the use of the whole grain in place of commercial varieties of flour is advocated for low-cost dietaries because of its higher nutritive value. While milling processes do not markedly interfere with the quality of the protein or with the energy value of wheat, certain valuable parts of the grain are removed. In white flour the phosphorus and iron contents are greatly reduced because these substances are located largely in the discarded layers of the kernel. The vitamins, found in the embryo or germ, are likewise removed in the manufacture of white flour. Even the commercial whole wheat or graham flours have been degerminated, but the mineral value of the whole wheat is not materially lessened.

"Most of the dietary essentials therefore are found in the wheat kernel, but not necessarily in the proportion that will best promote good growth in children and develop robust health and vitality in persons of all ages."

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Strength In Grain Prices Is Feature Of Month's Trend

Farm prices of Illinois farm products last month showed a tendency toward strength in prices of grain and weakness in prices of livestock and livestock products, according to an analysis by Dr. L. J. Norton, assistant chief in agricultural economics, College of Agriculture, University of Illinois.

There was a continued indication that the great decline of the past two years has about run its course, he said. Another outstanding point in the month's record was that the decline has carried prices of Illinois farm products down to a point where they average not much more than 50 per cent of the level during the 1921-1929 period, when prices were fairly stable following the 1920-1921 decline.

"Out of 18 products in a selected list, eight were higher on November 15 than a month earlier; nine were lower, and one was the same, after allowing for the usual seasonal variations. The commodities which were higher were all crop products, except for beef cattle and chickens. The most marked decreases were in butterfat, sheep and lambs. Hog prices declined sharply, but this was a normal seasonal change. Egg prices increased but not quite as much as the usual seasonal changes would warrant.

"The weakness in livestock and its products reflects the continued weak business situation. The advance in grain prices indicated that the prices of these products can at times be more independent of the business situation. This is logical, as they are directly influenced by world-wide conditions which are quite changeable and by speculative, forward-buying and holding operations.

"At what range in price the 1931 corn crop will move will only be known when the market is tested out by the marketing of new-crop corn, which must take place in large volume sometime during the winter months. The low level to which hog prices have fallen and the apparent heavy selling of hogs from some sections are not favorable to corn prices, although the price is still low in relation to size of the crop. This is true even allowing for the fact that the general level of commodities has declined by about 30 per cent in the past three years."

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Heavy Rains Make Terraces Popular For Saving Soil

Two more JoDaviess county farmers have just done what every farmer in the county should do, it is reported by Farm Adviser H. R. Brunnemeyer. They have terraced their fields to stop the fertility of their land from being washed away into the Mississippi river.

The farmers are Thomas Fieldsend & Sons and Roy Gage. When the terraces were built on their farms, Farm Adviser Brunnemeyer staged a demonstration to show interested land owners how to stake out and build terraces for best results.

As much as $30 an acre can be added to the value of land through terraces, and they can be built for around $2 an acre, according to farmers who have terraced rolling land in cooperation with the extension service of the College of Agriculture, University of Illinois. The purpose of terraces is to slow up the flow of run-off water and carry the surplus to a suitable outlet at the side of the field where it will be discharged without taking the top soil with it.

It would be impossible to estimate the amount of surface soil fertility carried away to the rivers by the heavy rains in this section this year, Farm Adviser Brunnemeyer said. Without exception every farm in the county should be terraced to some degree.

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Relief For Overburdened Land Goal In Farm-Home Meet

High taxes, the difficulty of getting real estate mortgage funds on farm security and numerous forced sales of land have led to the scheduling of a special session on land economic problems during the thirty-fourth annual Farm and Home Week, January 11 to 15, at the College of Agriculture, University of Illinois. The meeting is scheduled for January 12.

Recent changes in farm real estate valuations in Illinois compared with changes elsewhere and at other times will be the topic of a morning roundtable discussion led by Dr. Charles L. Stewart, chief in agricultural economics. Other speakers include John C. Watson, director of the taxation and statistics department, Illinois Agricultural Association, Chicago; D. Howard Doane, Doane Agricultural Service, St. Louis, Mo.; F. C. Bauer, chief in soil experiment fields; M. L. Mosher, of the farm organization and management department; L. J. Norton, assistant chief in agricultural economics, and C. B. Jennett, vice-president of the First Trust Joint Stock Land Bank, Chicago.

Adjustments in the present farm real estate situation will be considered in the afternoon session. The first point to be considered will be relations between borrowers and mortgagees in placing new loans, avoiding delinquency, aiding delinquents and helping worthy former owners of farms taken over to become reinstated. Speakers will include Wood Netherland, president of the Federal Land Bank, St. Louis, and S. F. Westbrook, vice-president of the Aetna Life Insurance Company, Hartford, Connecticut.

Proposals for improving the farm real estate situation requiring more or less change in public opinion, legislation and administration will be considered as a second point on the afternoon program. Speakers will be Charles M. Stahl, Illinois National Farm Loan Association, Champaign; Dr. Stewart; H. M. Dunlap, Savoy, and Alvin Eckert, Belleville.

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Girls Beat Boys In Staying With The Job To The End

Girls have the edge on boys when it comes to carrying a job through to the end. At least, such was the case in Knox county during the past year, according to a report by Farm Adviser A. R. Kemp.

Only four out of 144 girls enrolled in 4-H clothing clubs failed to complete their projects, while seven out of 144 boys enrolled in 4-H livestock clubs did not carry their training through to completion, he reported.

With only 11 out of the total registration of 288 members failing to finish, the county had a record of 96.1 per cent completed work, Farm Adviser Kemp pointed out. Training in improved farm and home practices was given the club members by means of definite projects outlined by the extension service of the College of Agriculture, University of Illinois.

-M-

Stockmen To Learn "Thousand Dollar" Feeding Methods

About $1,000 a year was added to the income on the best Illinois farms last year by livestock that was well managed and economically fed, according to farm accounts which farmers in four central counties kept in cooperation with the College of Agriculture, University of Illinois.

How that $1,000 was obtained will be explained to other farmers in a series of livestock feeding schools which E. T. Robbins, livestock extension specialist, will hold in about 50 counties this winter.

Instruction given at the schools will show farmers how to make the best possible use of such home-grown feeds as are adapted to balance the corn and other grains which form the basis of farm rations. The man who follows this plan will not spend much money for other feeds, but will get full value in what feeds he does buy, Robbins pointed out.

"Livestock can do much to relieve the depression upon the average farm. Beef cattle, sheep, hogs and horses take a minimum of labor, need very little feed besides what the farm produces and fit together well in the farm plan. Legume crops and corn supply most of their needs.

"There are great differences in farmers' success with stock. Some men fatten cattle for $5 to $10 a steer less than others. This year many farmers made $4 a lamb more than other men with equal opportunity. Good methods still produce $5 extra income on each hog. Records also reveal that an hour of horse labor costs only half as much on some farms as on others.

"These instances suggest that it is worth while to be a good stockman and to adopt a systematic, economical program. Farmers should watch for the announcement of the livestock feeding school in their county."

-M-

Fruit Growers Will Study Cost Cuts For Next Season

Fruit growers are up against the necessity of lowering production costs so that they can operate successfully on a margin of profit which has been narrowed by low prices for their products, says R. S. Marsh, horticulture extension specialist of the College of Agriculture, University of Illinois. Schools designed to help growers meet this and other problems have been arranged by the college for every section of the state.

"Regardless of a fruit grower's location it will be possible for him to attend a school or demonstration meeting on fruit production within a radius of 50 miles of his home. In most cases fruit growers will have the opportunity of attending such schools or courses of instruction within their own county.

"All of these schools and demonstrations will be in charge of the county farm advisers, who will be assisted by a representative from the University department of horticulture and the Illinois State Natural History Survey. If no school is being held in the home county, growers can rest assured that there will be one in a neighboring county. With the present system of hard roads, county lines can be forgotten and every fruit grower avail himself of this opportunity to get up-to-date information on production.

"The 1932 program of the extension service calls for special emphasis on reducing production costs without lowering the yield or quality of the product. If fruit growers expect to meet present-day competition, they should find out the date and place of the school nearest them and plan to attend. Farm advisers have the schedule of meetings."

-M-

Grafting Reduces Winter Losses Of Trees In Orchard

Many orchard trees that will be damaged or lost by girdling of mice and rabbits and by the splitting of bark as a result of temperature changes during winter days can be saved by bridge-grafting, according to a new circular just issued by the College of Agriculture, University of Illinois. It is entitled, "Bridge-Graft and Save Trunk-Injured Fruit Trees." It was written by R. L. McMunn, associate in pomology.

Ten points which McMunn lists to be remembered in bridge-grafting are: "(1) Bridge-graft before growth starts in the spring; (2) graft only into healthy tissue; (3) use dormant scion wood; (4) use scion wood of the previous season's growth; (5) use a very sharp knife; (6) arch the scions; (7) have cambium tissue of scion and stock in close contact; (8) keep exposed cambium tissue waxed over until scions have united with the trunk; (9) inspect the work at frequent intervals, and (10) do not rush the work; you are trying to save the life of a tree."

Types of trunk and root injury, purpose of bridge-grafting, facts concerning grafting, directions for grafting, grafting waxes and rodent control are covered in the circular.

Bridge-grafting, the circular explains, is used to bridge over the areas where the bark and the cambium have been destroyed, thus furnishing new channels through which the plant's activities can be carried on between the roots and the top. Trees of all ages can be bridge-grafted, and most of them successfully, if the work is done shortly after they have been girdled.

It usually does not pay to bridge-graft trees that have been completely girdled for a year or more. Also, bridge-grafting over body-blighted areas will not be profitable unless the blighted area and the exposed wood surfaces are sterilized and kept covered with grafting wax for the first year. Peach trees do not respond so satisfactorily to bridge-grafting as do other fruit trees, and it is doubtful if much will be gained by working them.

-M-

Seven Farmers In Peoria County On Lime Honor Roll

Seven Peoria county farmers are now on the honor roll of those who have limed all the tillable land of their farms, according to a report by Farm Adviser J. W. Whisenand. Two carloads of limestone just purchased by Charles Holmes to complete the liming of his farm makes him the seventh one on the list. Others are Dr. E. H. Bradley, Edwin Doubet, Fred Krause, Ernest Krause, Fred Goetze and A. C. Quin.

Use of limestone to build up crop yields and lower production costs, thereby increasing profits, is being advocated in a soil testing program which Farm Adviser Whisenand and the extension service of the College of Agriculture, University of Illinois are pushing in the county. Most of the land in the county is too acid to grow soil-building legumes successfully. Years of cropping without these legumes has sapped fertility until the efficiency of yields has slumped to the level of 33 bushels of corn an acre. In contrast, land in the county could be made to yield as efficiently as 70 bushels of corn an acre under proper soil treatment practices as recommended in the testing project.

William Windish, one of the Peoria county farmers who is following the recommendations, reported that this year on half of a field which he had limed and phosphated, he had one of the best stands of clover he had ever seen. The stand on the untreated half of the field was not worth leaving.

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Illinois Speeding Up Its Reduction Of Wheat Acreage

The 22 per cent cut which Illinois farmers made this fall in their winter wheat seedings speeds up a downward adjustment in acreage which has been going on almost without interruption since 1919, according to R. C. Ross, extension specialist in agricultural economics at the College of Agriculture, University of Illinois.

Incidentally, the 22 per cent reduction in Illinois is more than twice as much as the average reduction for the entire country, Ross pointed out. Estimated seedings in Illinois total 1,439,000 acres. The December 1 condition of the Illinois crop was 91 per cent compared with 86 per cent last year and a ten-year average condition of 85 per cent.

The sharp reduction in the Illinois winter wheat acreage will likely bring a further shift to other crops, a tendency which has prevailed since 1919, Ross said. The very large wheat acreage at that time was a result of expansion induced by wartime food demands and by high prices. For several years, however, the Illinois acreage each fall has been somewhat below that seeded in previous years.

Ruinously low prices are assigned by Ross as the chief reason for the fact that farmers of the country have reduced seedings of winter wheat by more than 10 per cent from the acreage planted a year ago. "A slight reduction was made in the acreage in the fall of 1930, but because of a lower than usual abandonment and a higher than average yield, the 1931 crop of winter wheat was the largest one since 1920. Owing to drouth the 1931 spring wheat crop of the country was much below normal.

"The condition of the winter wheat crop on December 1 for the country as a whole was much below that of the same date last year and considerably below the ten-year average for 1920-1929.

"In Kansas, the leading state in winter wheat production, the acreage reduction the past fall was 14 per cent and the December 1 condition was 70 per cent compared with 90 per cent last year. Other important producing states west of the Missouri river generally reduced acreages and also had lower than average condition.

"East of the Missouri river acreages of winter wheat were generally reduced, although the December 1 condition was higher than a year ago or than the ten-year average."

-M-

Farm Youngsters Raised Products Valued At $20,700

Products turned out during the past year by the 551 farm boys and girls enrolled in Vermilion county 4-H clubs had a total value in excess of $20,700, it was announced by Farm Adviser Otis Kercher. Vermilion is now in the front rank of Illinois counties carrying on 4-H club work as directed by the extension service of the College of Agriculture, University of Illinois, he said. Each of the club members followed recommended and approved practices as outlined in definite projects prepared by the extension service of the agricultural college.

-M-

Marketing Topics To Enliven State Farm Home Meeting

With the interest in marketing more widespread than it has ever been, a special course dealing with some of the major problems in the distribution of farm products is to be held for farmers and rural leaders during the thirty-fourth annual Farm and Home Week, January 11 to 15, at the College of Agriculture, University of Illinois.

General sessions covering principal farm commodities will be held January 11 and January 15, the opening and closing days of the course. Cream marketing will be taken up the second day, January 12, while livestock marketing and milk marketing will get the attention the third day, January 13. Poultry and egg marketing and strawberry marketing are scheduled for the fourth day, January 14.

Speakers for the cream marketing sessions will include representatives of the Illinois Produce Marketing Association, the Illinois Agricultural Association and the Illinois Butter Manufacturers' Association.

Charles E. Ewing, president of the National Livestock Marketing Association, Chicago, heads the list of speakers for the livestock marketing sessions. Appearing with him will be D. L. Swanson, manager of the Chicago Producers' Commission Association; Ray E. Miller, director of livestock marketing for the Illinois Agricultural Association, Chicago; Don J. Slater and J. C. Campbell, of the Chicago branch of the federal bureau of agricultural economics; and a number of managers and officials of shipping associations and producers' associations.

W. F. Priebe, president, Priebe & Sons, Chicago, and W. W. Brown, manager of Swift & Company, Mount Vernon, will be among the speakers in the poultry marketing sessions.

R. W. Balderson, manager of the National Dairy Council, Chicago; M. O. Moughan, secretary, Chicago Milk Council; D. N. Geyer, Pure Milk Association, Chicago and officials of several local milk producers' associations are on the milk marketing program.

Strawberry marketing will be handled by H. M. Newell and J. W. Lloyd, of the college's department of horticulture.

Lloyd Tenny, of the Chicago Mercantile Exchange, will lead the roundtable discussion closing the sessions, Friday.

-M-

Illinois Leading All Other States In Farm Tractors

Illinois now leads all states in number of tractors on farms with a total of 69,628, according to the farm mechanics department of the College of Agriculture, University of Illinois.

More efficient operation of these tractors, as well as of the many road and industrial tractors in the state, will be the goal of two tractor and gas engine short courses which the department has just announced. The first will be held January 18 to 23, and the second, January 25 to 30. Both courses will be the same and will be open to anyone more than 16 years of age.

Three hours of lecture work will be given each day explaining the operation, principles of construction of engines, valves and valve timing, ignition, fuels, carburetors, lubrication and engine troubles. Moving pictures will be used to show certain phases of power farming not covered during the lecture or laboratory periods.

Four or five hours a day will be devoted to practical laboratory work covering the subjects of engine construction, tractor construction, engine timing, make and break ignition, high tension ignition, carburetor study and adjustment, tractor and gas engine trouble work and tractor operation.

Application for enrollment in the courses can be made to county farm advisers or to the farm mechanics department.

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Survey Unlocking Soil Secrets For Illinois Farmers

Thirty years ago there wasn't one Illinois farmer who had reliable information on efficient soil management which is now available to every farmer through the state soil survey, according to E. A. Norton, assistant chief of the survey, at the College of Agriculture, University of Illinois.

Started in 1902, the survey has advanced to the point where soil reports are now available for 49 counties of the state. Unbound soil maps are available for 11 additional counties. For all remaining counties information is available by correspondence.

In the reports the results of all soil investigations having a bearing on the soils in the particular county are interpreted in the light of practical conditions existing on the farm. Methods of economical land use and improved agricultural practices are suggested.

The report makes it possible for every farmer to see what results have been obtained on soil such as occurs on his own farm. With this information he can decide whether his soil management program might be improved and production costs lowered.

Each county report contains a colored map showing the location and extent of the different soils. This map was made by a party of expert soil men who spent several months surveying the county, getting on every ten acres and separating the soils into distinct types. A desctiprion of the formation and characteristics of each type, as well as suggestions for its proper management, are included in the soil reports.

Principles of fertility, crop rotations, land adaptation and use of manure, limestone and fertilizers are reviewed in connection with numerous field experiments conducted on soils similar to those occuring in the county. Copies of the reports may be had from county farm advisers or from the experiment station of the agricultural college.

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Seed Corn Tests Which Saved Crop Will Be Made Again

A seed corn testing service which last year saved farmers in this section from disappointing and unprofitable yields on 15,120 acres of corn land is to be offered again by the McDonough County Farm Bureau, it is announced by Farm Adviser R. C. Doneghue.

Eighteen per cent, or 1,890 bushels out of 1,049,739 ears tested for farmers last year were found unfit for seed. Losses would have been widespread, for the 1,890 bushels would have been enough to have planted 15,120 acres. This area, if planted to the unfit seed, would have had a poor stand of corn and what did come up would have yielded poorly with a high percentage of poor quality and unmarketable corn, Farm Adviser Doneghue pointed out.

The seed corn testing service is a development of the better seed corn program which the extension service of the College of Agriculture, University of Illinois is fostering throughout the state.

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Potato Tests Show Way To Grow More Profitable Yields

An increase of 154 bushels an acre which Bergmann Brothers, Caseyville, obtained in their Irish potatoes through the use of superphosphate and potash has pointed the way to more profitable yields of this crop on St. Clair county farms, according to a report by Farm Adviser B. W. Tillman. The brothers cooperated with the extension service of the College of Agriculture, University of Illinois in the demonstration comparing different methods of fertilizing potatoes.

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